Scientific Excellence • Resource Protection & Conservation • Benefits for Canadians
Excellence scientifique • Protection et conservation des ressources • Bénéfices aux Canadiens

Atlas of Physical Oceanographic Data for Current Surge Studies Near the Gully, Scotian Shelf: 1984

H. Sandstrom and J.A. Elliott

Physical and Chemical Sciences Branch
Scotia-Fundy Region
Department of Fisheries and Oceans

Bedford Institute of Oceanography
P.O. Box 1006
Dartmouth, Nova Scotia
B2Y 4A2

September 1989

Canadian Technical Report of Hydrography and Ocean Sciences No. 117

Fisheries and Oceans
Pêches et Océans

Canada

Canadian Technical Report of Hydrography and Ocean Sciences

Technical reports contain scientific and technical information that contributes to existing knowledge but which is not normally appropriate for primary literature. The subject matter is related generally to programs and interests of the Ocean Science and Surveys (OSS) sector of the Department of Fisheries and Oceans.

Technical reports may be cited as full publications. The correct citation appears above the abstract of each report. Each report is abstracted in *Aquatic Sciences and Fisheries Abstracts* and indexed in the Department's annual index to scientific and technical publications.

Technical reports are produced regionally but are numbered nationally. Requests for individual reports will be filled by the issuing establishment listed on the front cover and title page. Out of stock reports will be supplied for a fee by commercial agents.

Regional and headquarters establishments of Ocean Science and Surveys ceased publication of their various report series as of December 1981. A complete listing of these publications is published in the *Canadian Journal of Fisheries and Aquatic Sciences*, Volume 39: Index to Publications 1982. The current series, which begins with report number 1, was initiated in January 1982.

Rapport technique canadien sur l'hydrographie et les sciences océaniques

Les rapports techniques contiennent des renseignements scientifiques et techniques qui constituent une contribution aux connaissances actuelles, mais qui ne sont pas normalement appropriés pour la publication dans un journal scientifique. Le sujet est généralement lié aux programmes et intérêts du service des Sciences et levés océaniques (SLO) du ministère des Pêches et des Océans.

Les rapports techniques peuvent être cités comme des publications complètes. Le titre exact paraît au-dessus du résumé de chaque rapport. Les rapports techniques sont résumés dans la revue *Résumés des sciences aquatiques et halieutiques*, et ils sont classés dans l'index annuel des publications scientifiques et techniques du Ministère.

Les rapports techniques sont produits à l'échelon régional, mais numérotés à l'échelon national. Les demandes de rapports seront satisfaites par l'établissement auteur dont le nom figure sur la couverture et la page du titre. Les rapports épuisés seront fournis contre rétribution par des agents commerciaux.

Les établissements des Sciences et levés océaniques dans les régions et à l'administration centrale ont cessé de publier leurs diverses séries de rapports en décembre 1981. Une liste complète de ces publications figure dans le volume 39, Index des publications 1982 du *Journal canadien des sciences halieutiques et aquatiques*. La série actuelle a commencé avec la publication du rapport numéro 1 en janvier 1982.

Canadian Technical Report of

Hydrography and Ocean Sciences No. 117

September 1989

ATLAS OF PHYSICAL OCEANOGRAPHIC DATA FOR CURRENT SURGE STUDIES NEAR THE GULLY, SCOTIAN SHELF: 1984

by

H. Sandstrom and J.A. Elliott

Physical and Chemical Sciences Branch
Scotia-Fundy Region
Department of Fisheries and Oceans

Bedford Institute of Oceanography
P.O. Box 1006
Dartmouth, Nova Scotia
Canada B2Y 4A2

90-05149/

Acknowledgements

Presentation of an extensive data set collected by BATFISH forms a major part of this report. The software packages to process and display this data were developed through a contract with Wycove Systems Ltd. Metrology Division assisted with the BATFISH system and the work was completed through the continued professional support from the staff of AOL and the *CSS Dawson*. The work is supported in part by the Federal Panel on Energy, Research and Development (PERD).

©Minister of Supply and Services 1989

Cat. No. FS97-18/117E ISSN 0711-6764

Correct citation for this publication:

Sandstrom, H. and J.A. Elliott. 1989. Atlas of physical oceanographic data for current surge studies near The Gully, Scotian Shelf: 1984. Can. Tech. Rep. Hydrogr. Ocean Sci. No. 117: iv + 304 pp.

ABSTRACT

Sandstrom, H. and J.A. Elliott. 1989. Atlas of physical oceanographic data for current surge studies near The Gully, Scotian Shelf: 1984. Can. Tech. Rep. Hydrogr. Ocean Sci. No. 117: iv + 304 pp.

Physical oceanographic data are presented for *CSS DAWSON* cruise 84-034. Included are the results of CTD casts, moored current meters, BATFISH tows, and acoustic backscattering charts. The area of the cruise is in the vicinity of The Gully, Scotia Shelf near 59°W.

RÉSUMÉ

Sandstrom, H. and J.A. Elliott. 1989. Atlas of physical oceanographic data for current surge studies near The Gully, Scotian Shelf: 1984. Can. Tech. Rep. Hydrogr. Ocean Sci. No. 117: iv + 304 pp.

On présente des données d'océanographie physique recueillies lors de la mission 84-034 du *NSC DAWSON*. Les résultats fournis proviennent de sondes CTP, de courantomètres, de remorquages du BATFISH et de cartes de rétrodiffusion acousitque. La mission en question se déroulait sur la plate-forme néo-écossaise, aux alentours de l'endroit nommé le Gully, près de 59° de longitude ouest.

TABLE OF CONTENTS

Page

ACKNOWLEDGEMENTS ii

ABSTRACT iii

1. INTRODUCTION 1

2. INSTRUMENTATION AND DATA REDUCTION 1

3. CRUISE 84-034 - OVERVIEW 4

4. REFERENCES 4

5. FIELD DATA

CTD Sections: Figures 1-3 6

Current Meters: Figures 4-15 10

BATFISH Station 40: Figures 16-28 23

BATFISH Station 41: Figures 29-45 37

BATFISH Station 42: Figures 46-60 55

BATFISH Station 43: Figures 61-64 71

BATFISH Station 44: Figures 65-77 76

BATFISH Station 45: Figures 78-92 90

BATFISH Station 46: Figures 93-106 106

BATFISH Station 47: Figures 107-120 121

BATFISH Station 48: Figures 121-142 136

BATFISH Station 49: Figures 143-157 159

BATFISH Station 50: Figures 158-174 175

BATFISH Station 51: Figures 175-188 193

BATFISH Station 52: Figures 189-223 208

BATFISH Station 53: Figures 224-247 244

BATFISH Station 54: Figures 248-258 269

BATFISH Station 55: Figure 259 281

BATFISH Station 56: Figures 260-266 283

BATFISH Station 57: Figures 267-279 291

1.0 INTRODUCTION

This is the third in a series of atlases prepared for a program supported by PERD funding to study the incidence of large amplitude tidally generated internal waves along east coast continental shelves (Sandstrom & Elliott, 1986, 1989). It covers CSS *Dawson* cruise 84-034. This cruise collected field data in the vicinity of The Gully east of and adjacent to Sable Island near 59°W (see figure).

The program was completed during the period of August 15 to September 1, 1984. Two moorings were deployed for the duration of the cruise. The bulk of the data reported in this atlas were collected with a CTD, BATFISH and 12 kHz Raytheon Sounder. The site was chosen to provide detailed observations of soliton-like features present in SLAR images of the area. Also this region has been the site of numerous exploratory wells and therefore of special interest to the oil industry. The principal objectives of this cruise were (a) to collect additional data for modelling the internal waves or solitons at east coast sites and (b) to obtain detailed observations on individual wave packets.

2.0 INSTRUMENTATION AND DATA REDUCTION

All data are presented in GMT and Julian calendar.

2.1 CTD

The instrument used was a Guildline Digital CTD mounted on a rosette. Two bottle samples from a number of casts were used to monitor salinity and temperature calibrations. Standard deviations were 0.014‰ and 0.017°C. Standard processing using STPIN converted the raw CTD data into decimated form at 1 db bins by pressure sorting. In addition to conversion to physical units, STPIN performed range checks and despiked the data. Adjusted calibrations, using STPROC, were salinity -0.016‰, temperature +0.009°C and pressure +5.61db. Expected accuracy is ±0.005°C, ±0.01‰, ±1db and $\pm 0.01\sigma_t$.

'THE GULLY'
STUDY AREA

2.2 Current Meters

Two fairey floats were used at the top of the two moorings, each with upper Aanderaa current meters placed at approximately 15 m depth and a lower meter at approximately 67 m. Since no significant wave fields were encountered, contamination by wave motion should be small. Aanderaa data were translated on a PDP-8E for processing on the Cyber. Speed calibrations are those of the manufacturer applied to first differences of rotor count; threshold velocity is assumed to be 0.015m/s. Accuracy is approximately ±2% of speed. Compass calibrations performed in the laboratory just prior to the cruise were applied to direction data taken as the mean of successive readings (Boyce, 1982). Direction errors are about ±5°. Standard sampling rate was five minutes. All time series are checked for correct time base; data spikes are deleted by linear interpolation.

2.3 BATFISH

The system consisted of the standard version with a Digital CTD. Typical operating procedure was a ship speed of about 8 kts (15 km/hr), and a climb-dive rate of 2 m/s. The depth range was adjusted depending on local depth of bottom, however all observations were in the upper 100 m. On some tows we attempted to collect data at a rate to maximize sampling detail of the soliton groups. Data processing was undertaken on the Cyber and proceeded in a sequence similar to the CTD analysis. Final contoured plots were generated by an automated contouring routine. The program used is a modified version of SECCON (Section Contouring). This is a part of the CONMAP (Contour Mapping) System used at MEDS. Changes were made so that the routine could read the CM format. Standard accuracy for the instrument is $S = \pm 0.05‰$, $T = \pm 0.02°C$, $P = \pm 2$ db, and $\sigma_t = \pm 0.05$ (A. Bennett, personal comm.). The expected scalar resolution is about ±1 m (Bennett and Huaide, 1986).

2.4 Acoustics

Data presented are reproductions of the original dry paper field recordings of acoustic backscattering observed by the standard configuration of the 12 kHz Raytheon PTR Sounder. For the majority of the data, the recorder operated with automatic gain control.

3.0 CRUISE 84-034 OVERVIEW

The program was planned to intensively study the internal wave process around The Gully, a major canyon-like feature on the Scotian Shelf east of Sable Island near 59°W. Two moorings were placed for the duration of the cruise, one on either side of The Gully. Mooring #659 was located at 43°43.07'N, 59°30.40'W; #660 at 44°1.15'N, 58°51.64'W. A general survey of the large scale density field was obtained by occupying three near N-S lines across the shelf edge and east of, west of and through The Gully. See inset on BATFISH data display for a plan view. The majority of the cruise focussed on various BATFISH tows with backscattering acoustics to identify the presence of soliton features, to establish their occurrence in relation to the local tide, and to map the detail of some of the groups of waves. Two modes of operation were employed: 1) a routine survey over a fixed path by repeated transects of approximately one hour duration lasting over 12 hr period, and 2) tracking a given feature as it propagated shoreward by repeated crossings while following the feature.

REFERENCES

Bennett, A.S. and T. Huaide. 1986. CTD time constant connection, Deep-Sea Res., 33(10): 1425-1438.

Boyce, R. 1982. Calibration of conductivity and temperature for the Aanderaa RCM-5 Current Meter, Can. Tech. Rep. of Hyd. and Ocean Sci. No. 1: 27 pp.

Cruise Report 84-034, *CSS DAWSON*, August 15 - September 1, 1984. BIO, AOL, Dartmouth, N.S.

Sandstrom, H. and J.A. Elliott. 1986. Atlas of physical oceanographic data for current surge studies on the Scotian Shelf: 1980-82. Can. Tech. Rep. Hyd. and Ocean Sci. No. 77: iii + 261 pp.

Sandstrom, H. and J.A. Elliott. 1989. Atlas of physical oceanographic data for current surge studies on the Scotian Shelf: 1983. Can. Tech. Rep. Hyd. and Ocean Sci. No. 114: iv + 379 pp.

Figures 1-3

North-south CTD sections of Temperature, Salinity and Sigma-t for 84-034. An inset in the BATFISH data plots shows the station locations.

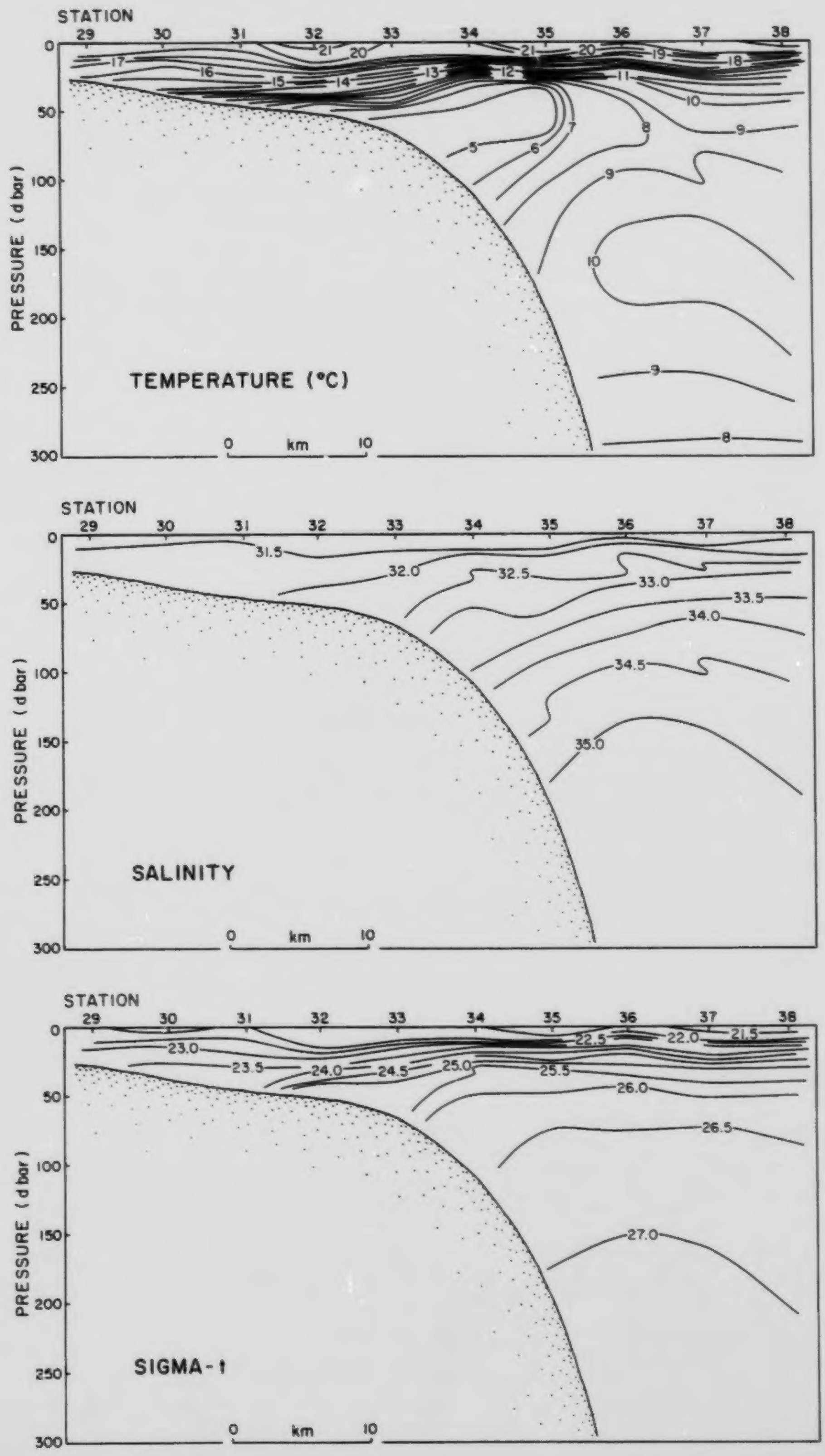

STATION
29
30
31
32
33
34
35
36
37
38
PRESSURE (d bar)
TEMPERATURE (°C)
0 km 10
SALINITY
SIGMA-t

Fig. 1

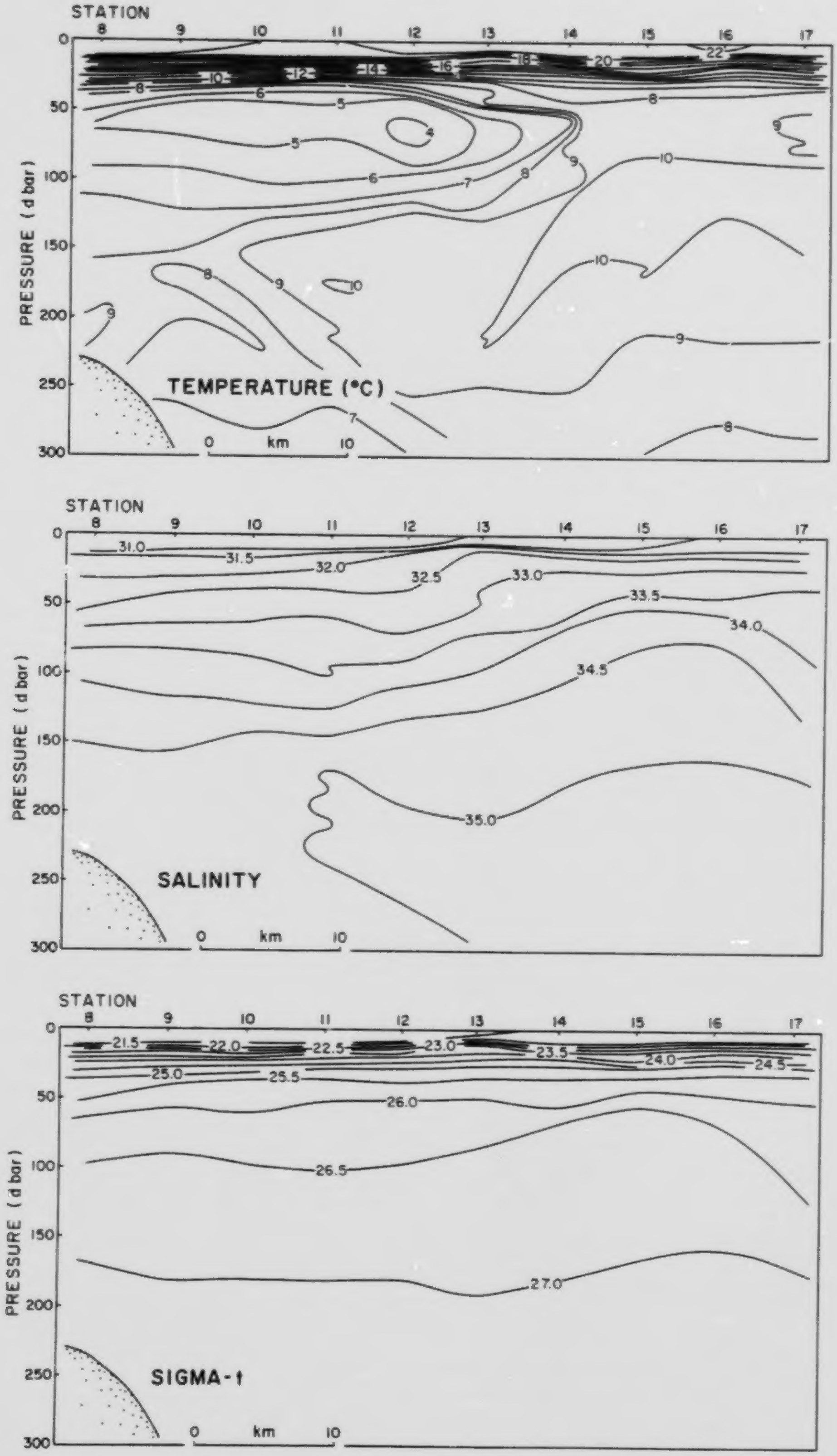

STATION
8 9 10 11 12 13 14 15 16 17
PRESSURE (d bar)
0 50 100 150 200 250 300
TEMPERATURE (°C)
0 km 10
STATION
8 9 10 11 12 13 14 15 16 17
PRESSURE (d bar)
0 50 100 150 200 250 300
SALINITY
31.0 31.5 32.0 32.5 33.0 33.5 34.0 34.5 35.0
0 km 10
STATION
8 9 10 11 12 13 14 15 16 17
PRESSURE (d bar)
0 50 100 150 200 250 300
SIGMA-t
21.5 22.0 22.5 23.0 23.5 24.0 24.5 25.0 25.5 26.0 26.5 27.0
0 km 10

Fig. 2

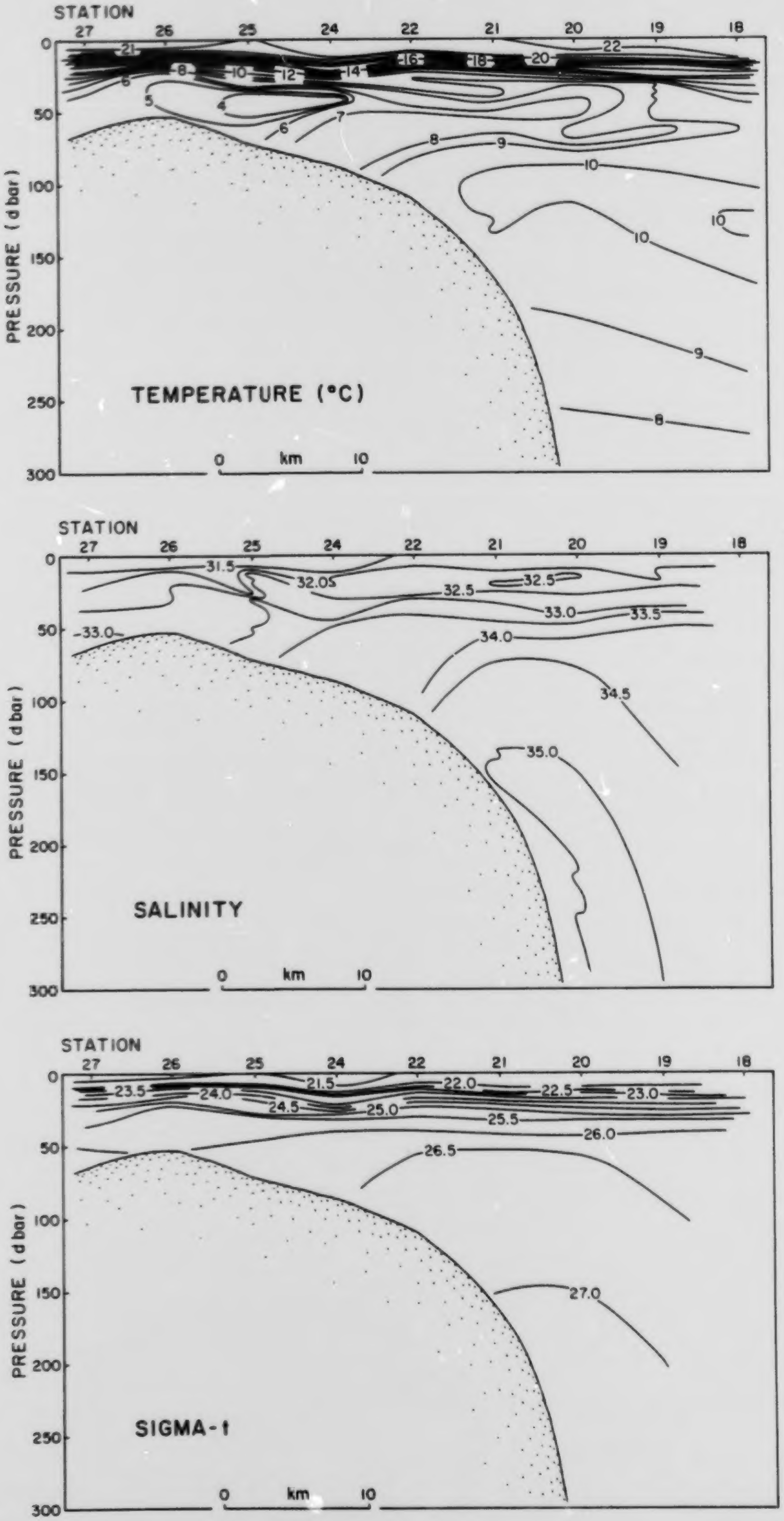

STATION
TEMPERATURE (°C)
PRESSURE (d bar)
km
STATION
SALINITY
PRESSURE (d bar)
km
STATION
SIGMA-t
PRESSURE (d bar)
km

Fig. 3

Figures 4-15.

R(ate), (D)irection, U (east component), V (north component) of current, progressive vector and current vector plots for current meter moorings, #659 (43°43.'07N, 59°30.'40W) and #660 (44°1.'15N, 58°51.'64W).

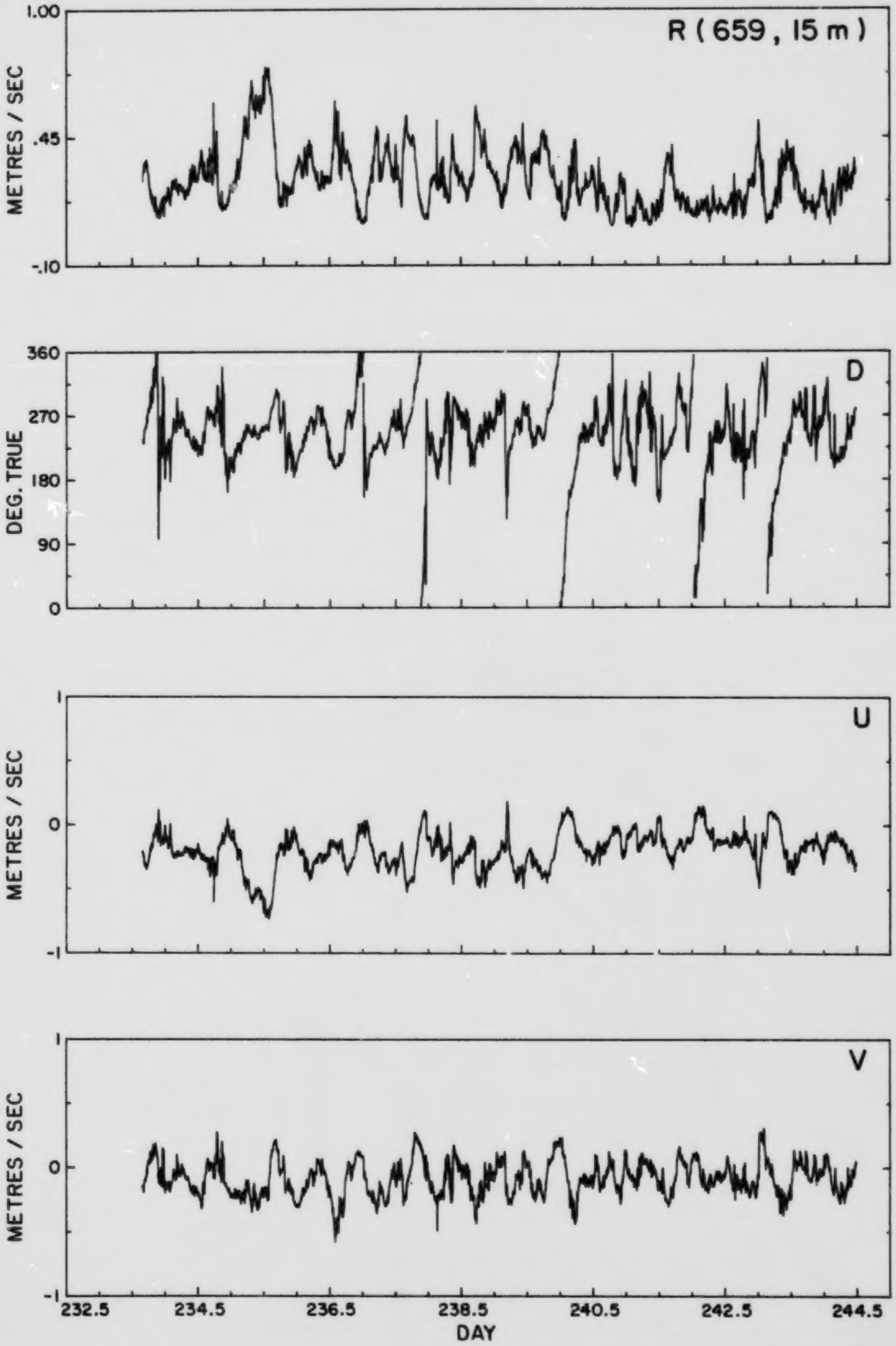

1.00
R (659 , 15 m)
METRES / SEC
.45
-.10
360
D
270
DEG. TRUE
180
90
0
1
U
METRES / SEC
0
-1
1
V
METRES / SEC
0
-1
232.5
234.5
236.5
238.5
240.5
242.5
244.5
DAY

Fig. 4

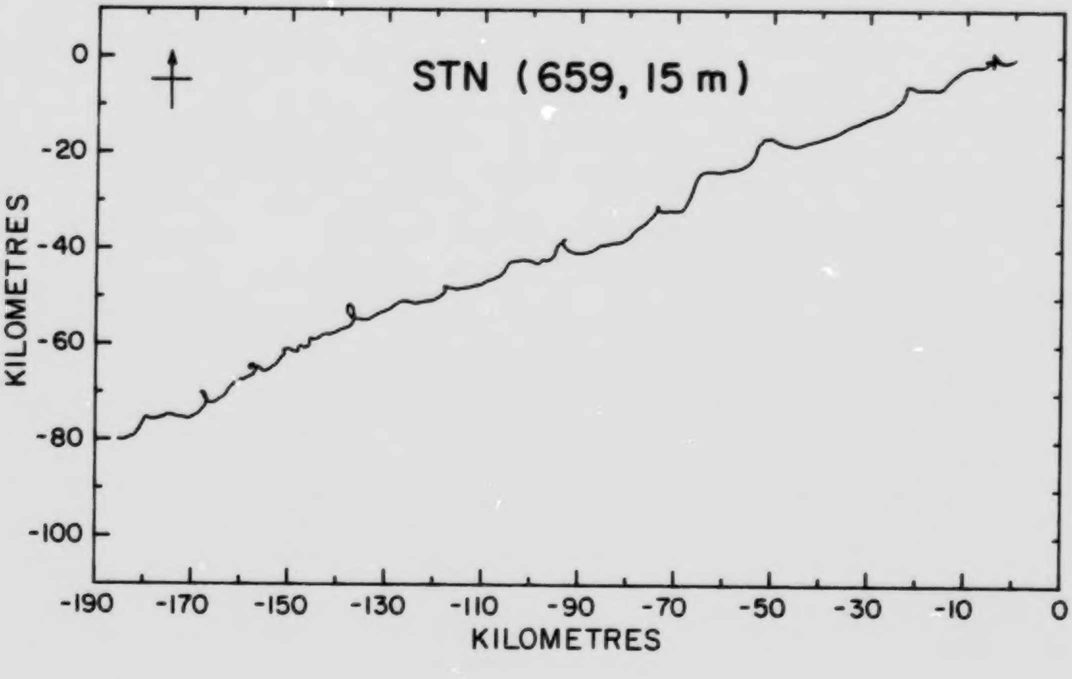

STN (659, 15 m)
0
-20
-40
-60
-80
-100
KILOMETRES
-190
-170
-150
-130
-110
-90
-70
-50
-30
-10
0
KILOMETRES

Fig. 5

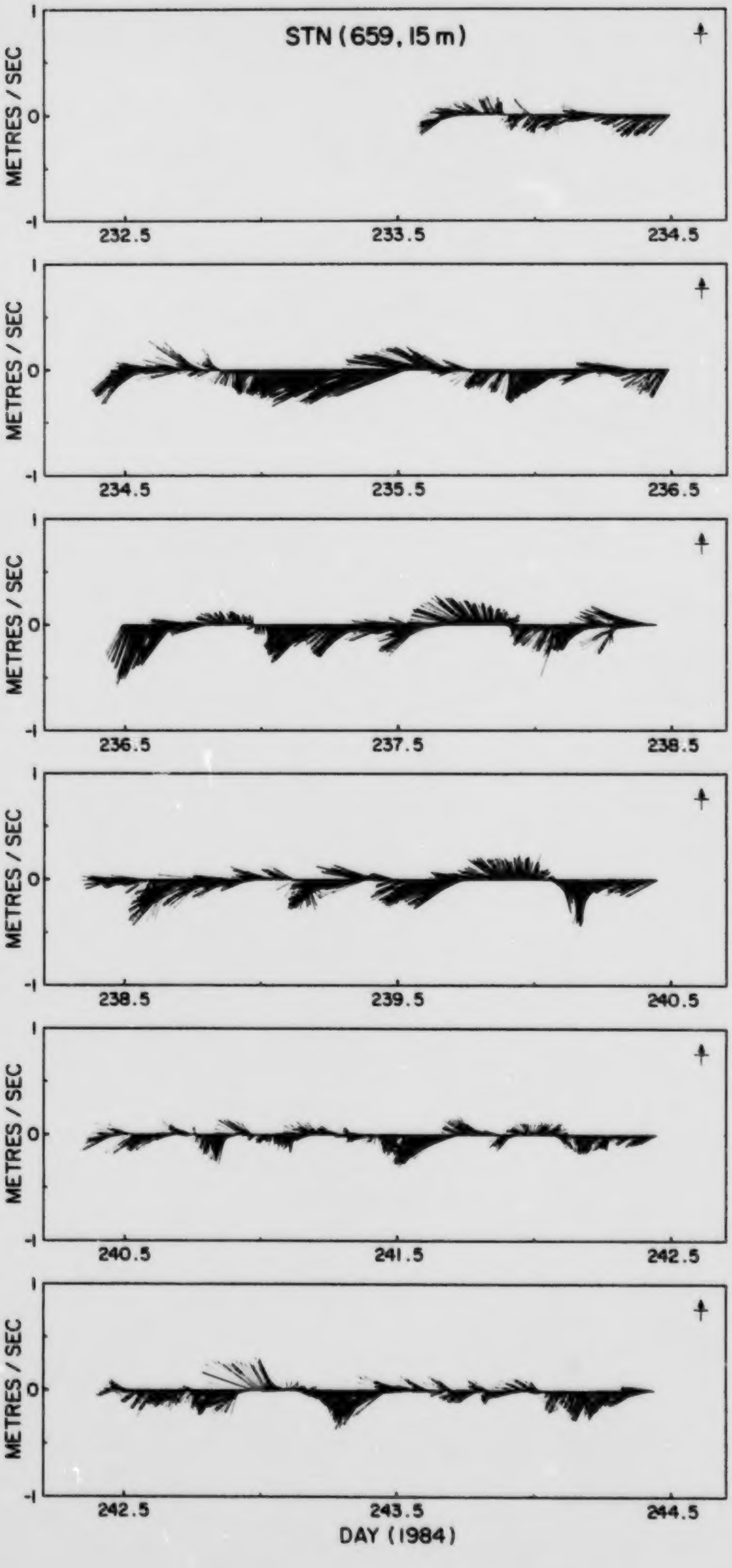
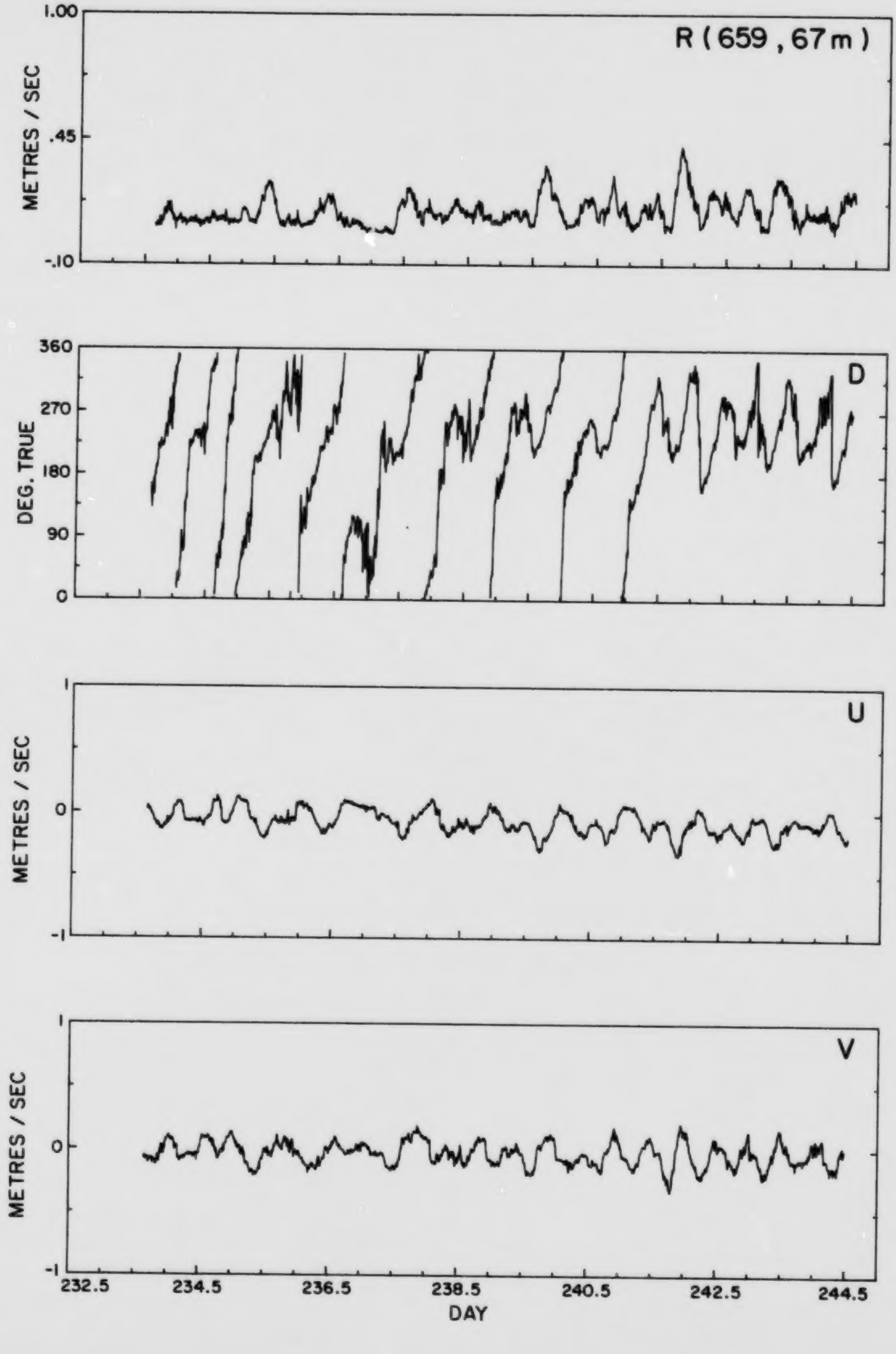

STN (659, 15 m)
METRES / SEC
1
0
-1
232.5
233.5
234.5
234.5
235.5
236.5
236.5
237.5
238.5
238.5
239.5
240.5
240.5
241.5
242.5
242.5
243.5
244.5
DAY (1984)

Fig. 6



1.00
.45
-.10
METRES / SEC
R (659, 67m)
360
270
180
90
0
DEG. TRUE
D
1
0
-1
METRES / SEC
U
1
0
-1
METRES / SEC
V
232.5
234.5
236.5
238.5
240.5
242.5
244.5
DAY

Fig. 7

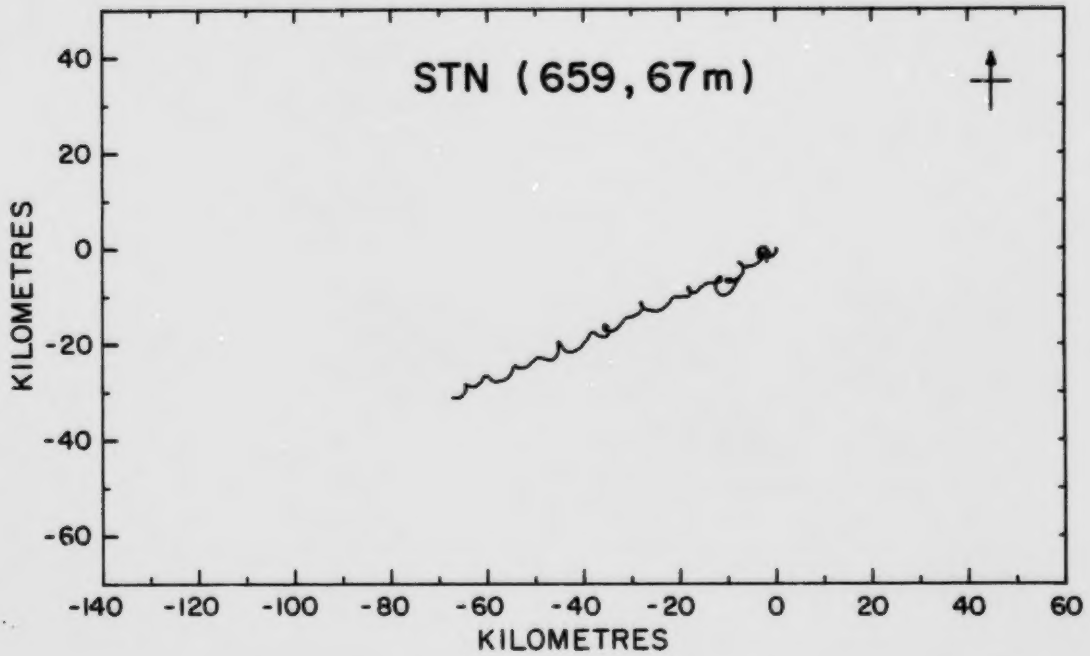

STN (659, 67m)
40
20
0
-20
-40
-60
KILOMETRES
-140
-120
-100
-80
-60
-40
-20
0
20
40
60
KILOMETRES

Fig. 8

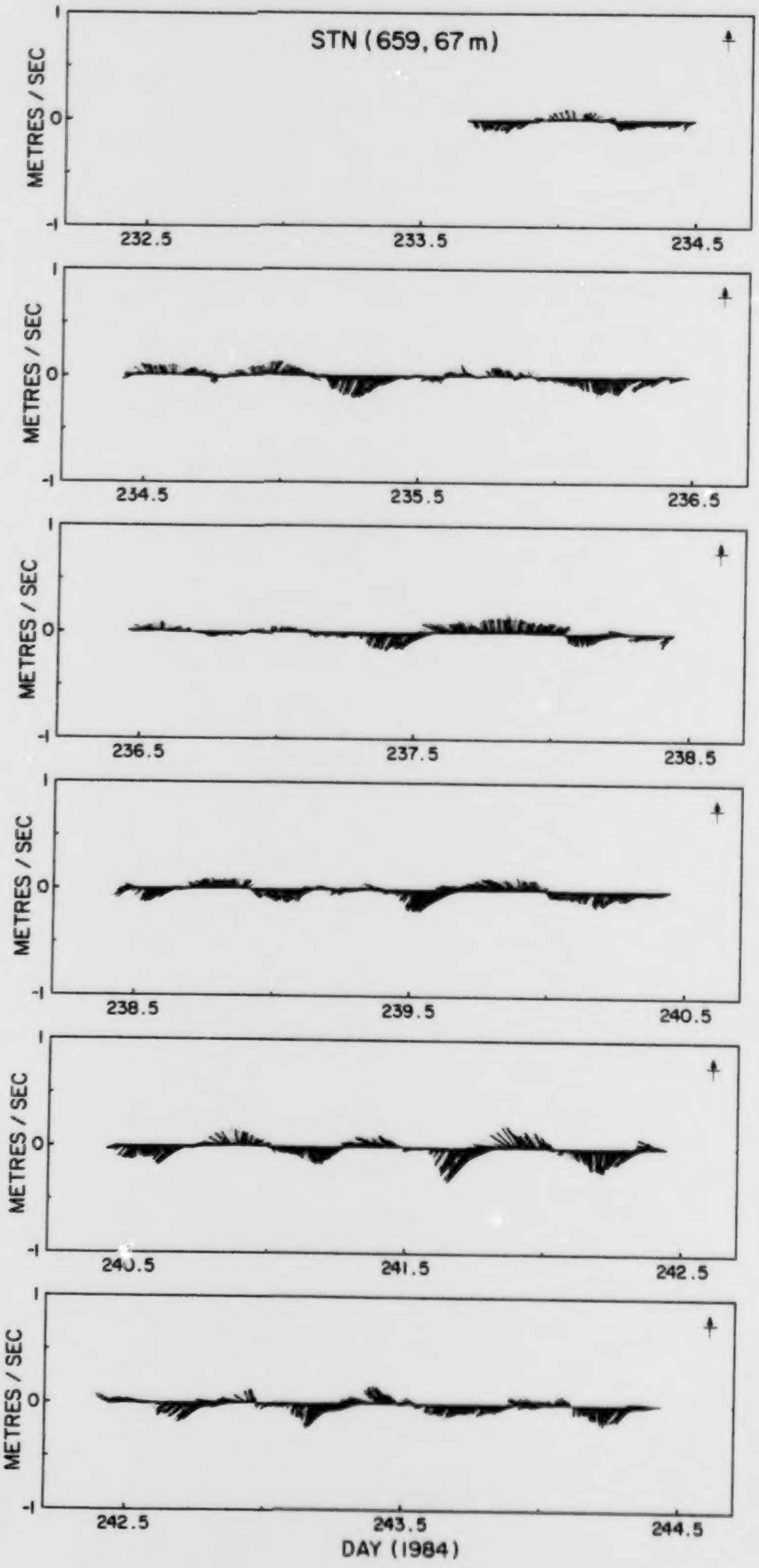

STN (659, 67 m)
METRES / SEC
1
0
-1
232.5
233.5
234.5
235.5
236.5
237.5
238.5
239.5
240.5
241.5
242.5
243.5
244.5
DAY (1984)

Fig. 9

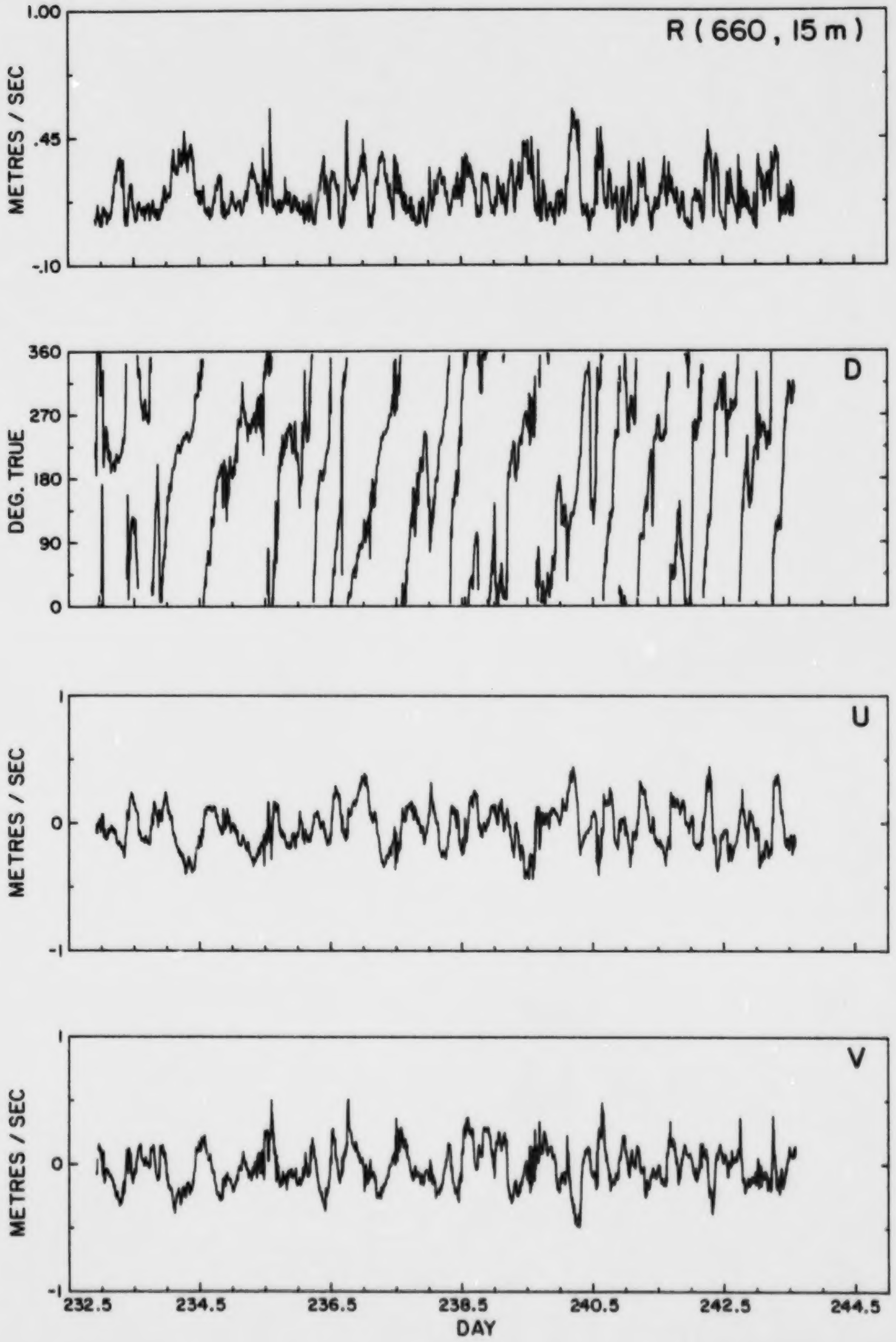

R (660 , 15 m)
METRES / SEC
1.00
.45
-.10
D
DEG. TRUE
360
270
180
90
0
U
METRES / SEC
1
0
-1
V
METRES / SEC
1
0
-1
232.5
234.5
236.5
238.5
240.5
242.5
244.5
DAY

Fig. 10

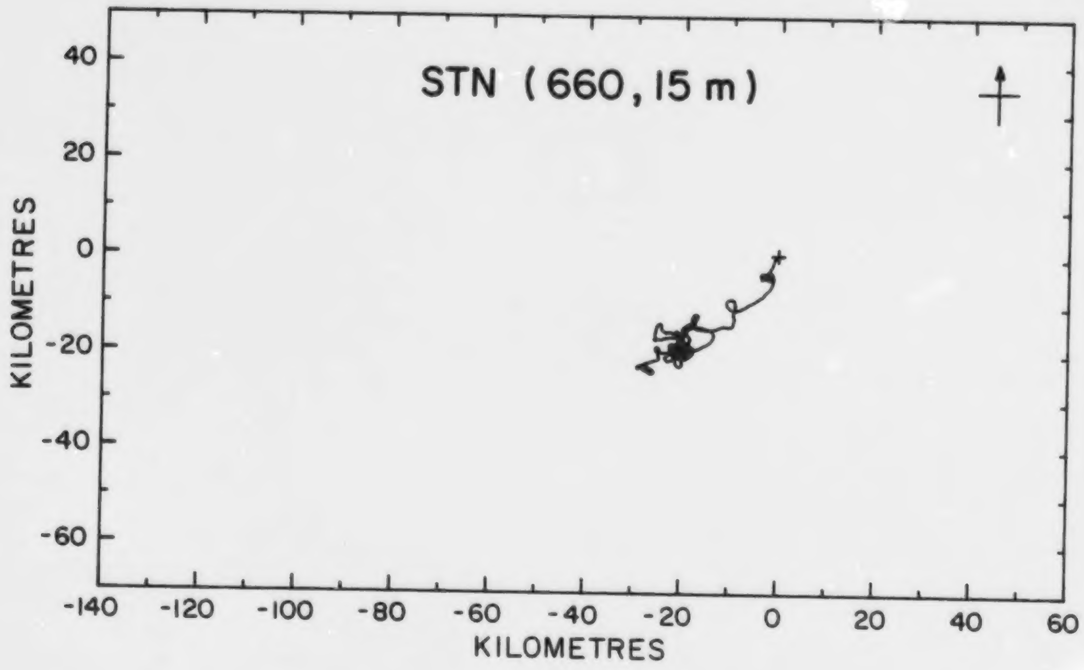

STN (660, 15 m)
KILOMETRES
40
20
0
-20
-40
-60
-140
-120
-100
-80
-60
-40
-20
0
20
40
60
KILOMETRES

Fig. 11

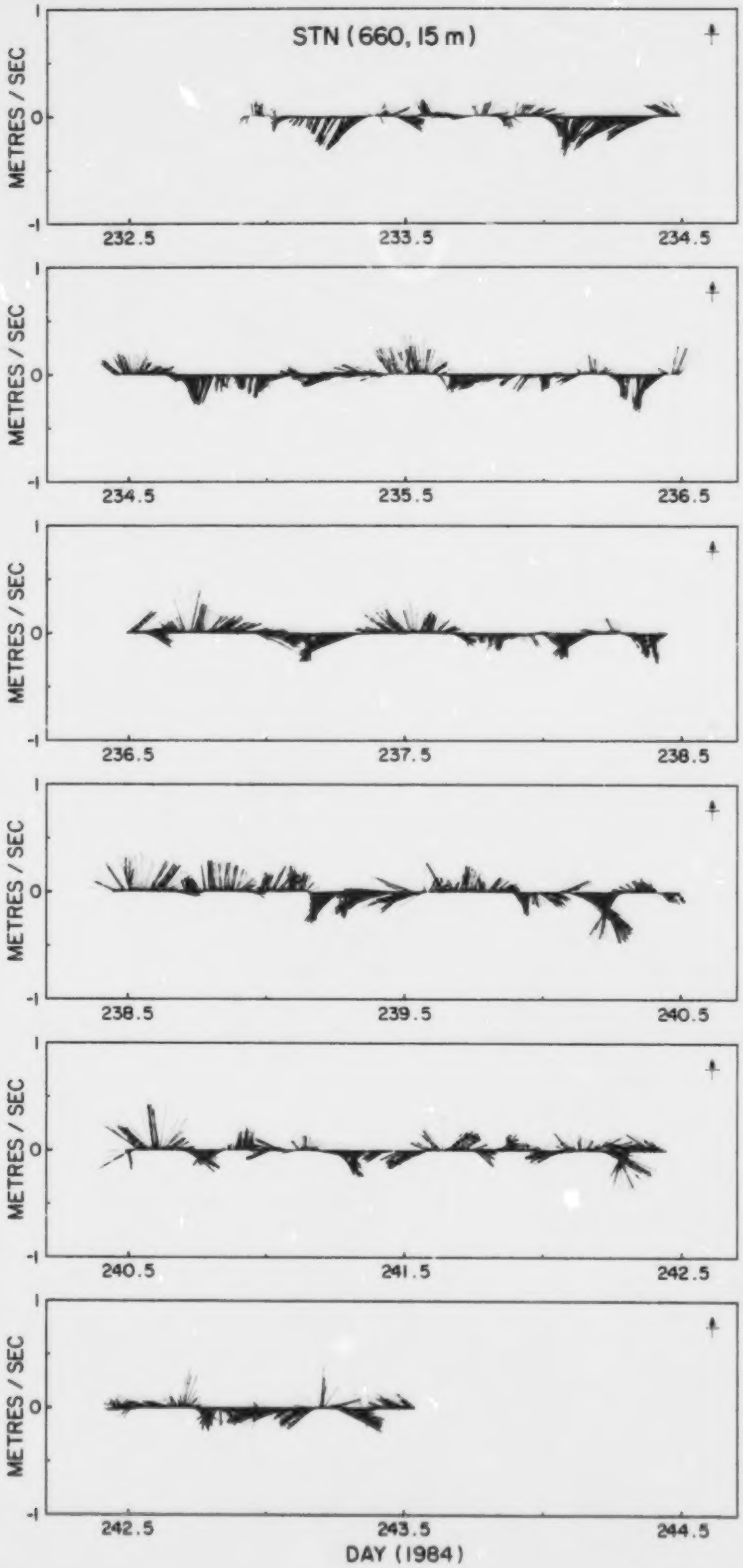

STN (660, 15 m)
METRES / SEC
232.5
233.5
234.5
235.5
236.5
237.5
238.5
239.5
240.5
241.5
242.5
243.5
244.5
DAY (1984)

Fig. 12

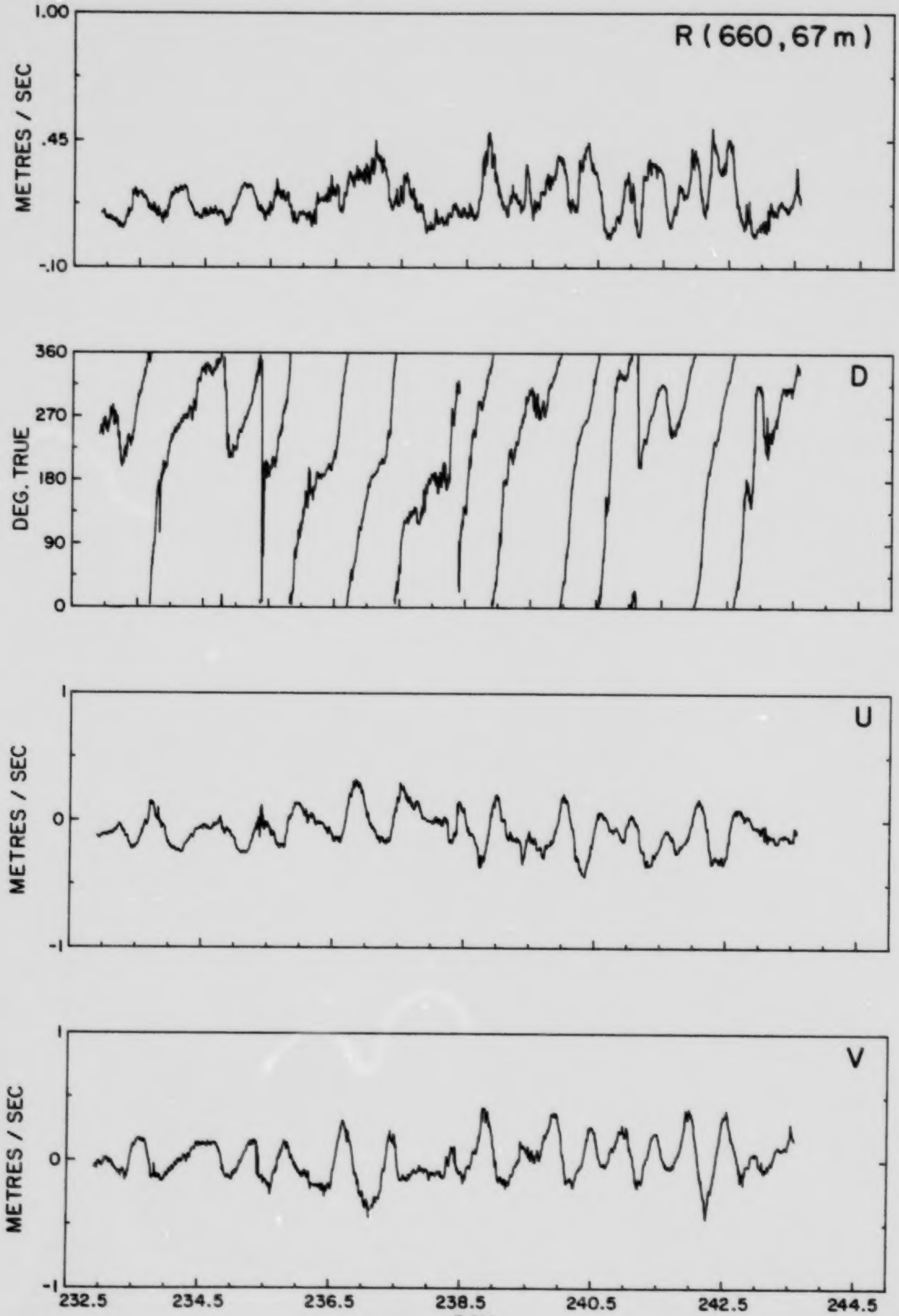

R (660, 67 m)
METRES / SEC
1.00
.45
-.10
D
DEG. TRUE
360
270
180
90
0
U
METRES / SEC
1
0
-1
V
METRES / SEC
1
0
-1
232.5
234.5
236.5
238.5
240.5
242.5
244.5
DAY

Fig. 13

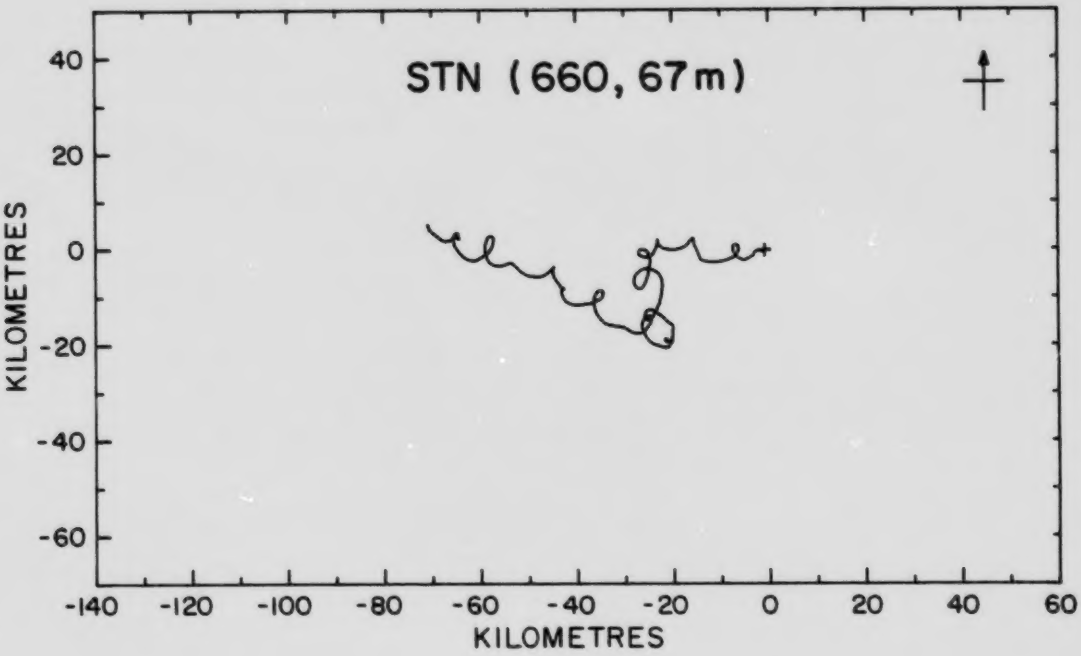

STN (660, 67m)
40
20
0
-20
-40
-60
KILOMETRES
-140
-120
-100
-80
-60
-40
-20
0
20
40
60
KILOMETRES

Fig. 14

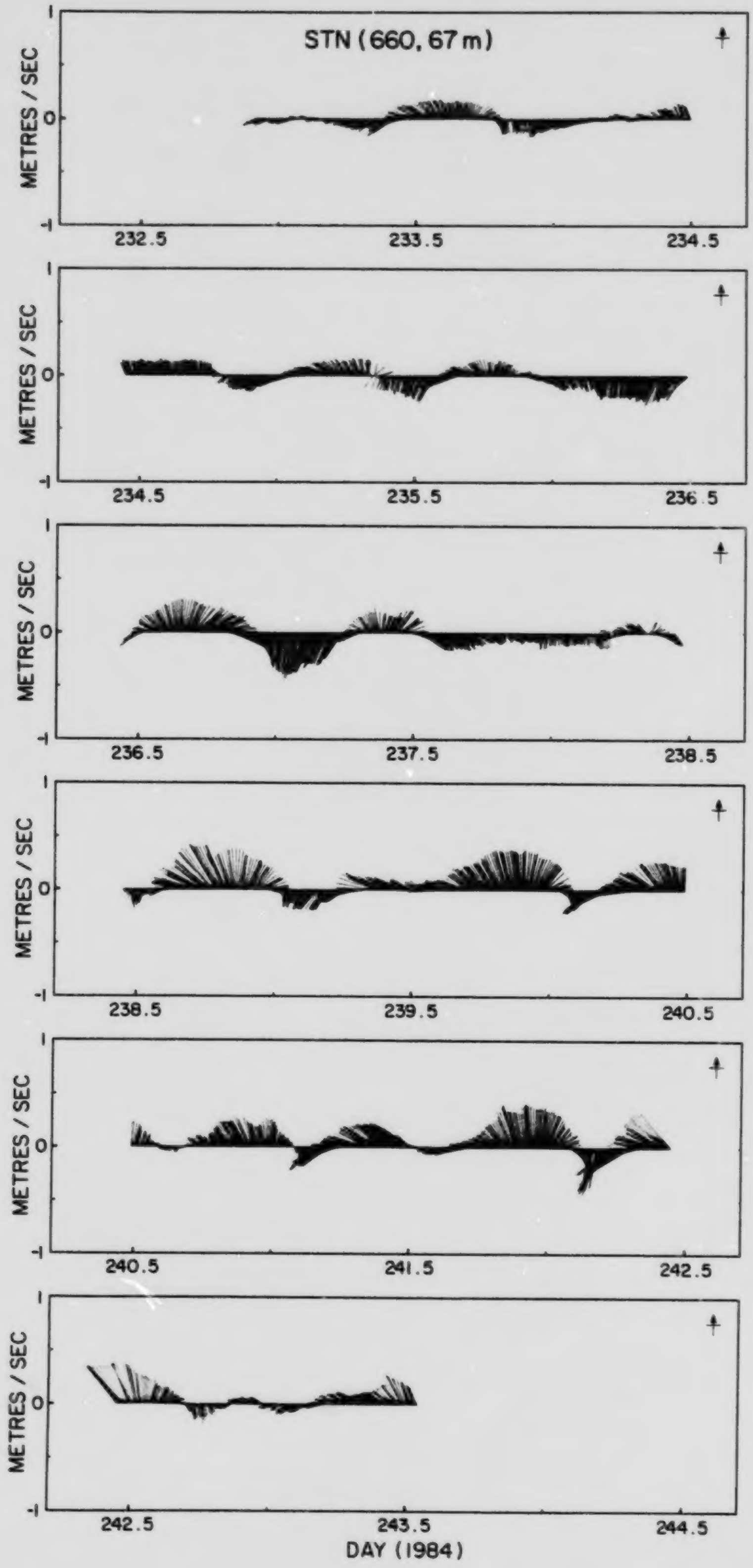

STN (660, 67 m)
METRES / SEC
1
0
-1
232.5
233.5
234.5
234.5
235.5
236.5
236.5
237.5
238.5
238.5
239.5
240.5
240.5
241.5
242.5
242.5
243.5
244.5
DAY (1984)

Fig. 15

Figures 16-28.

BATFISH station 40; 13 sections of Temperature, Salinity and Sigma-t vs. pressure, location map and latitude vs. time plot.

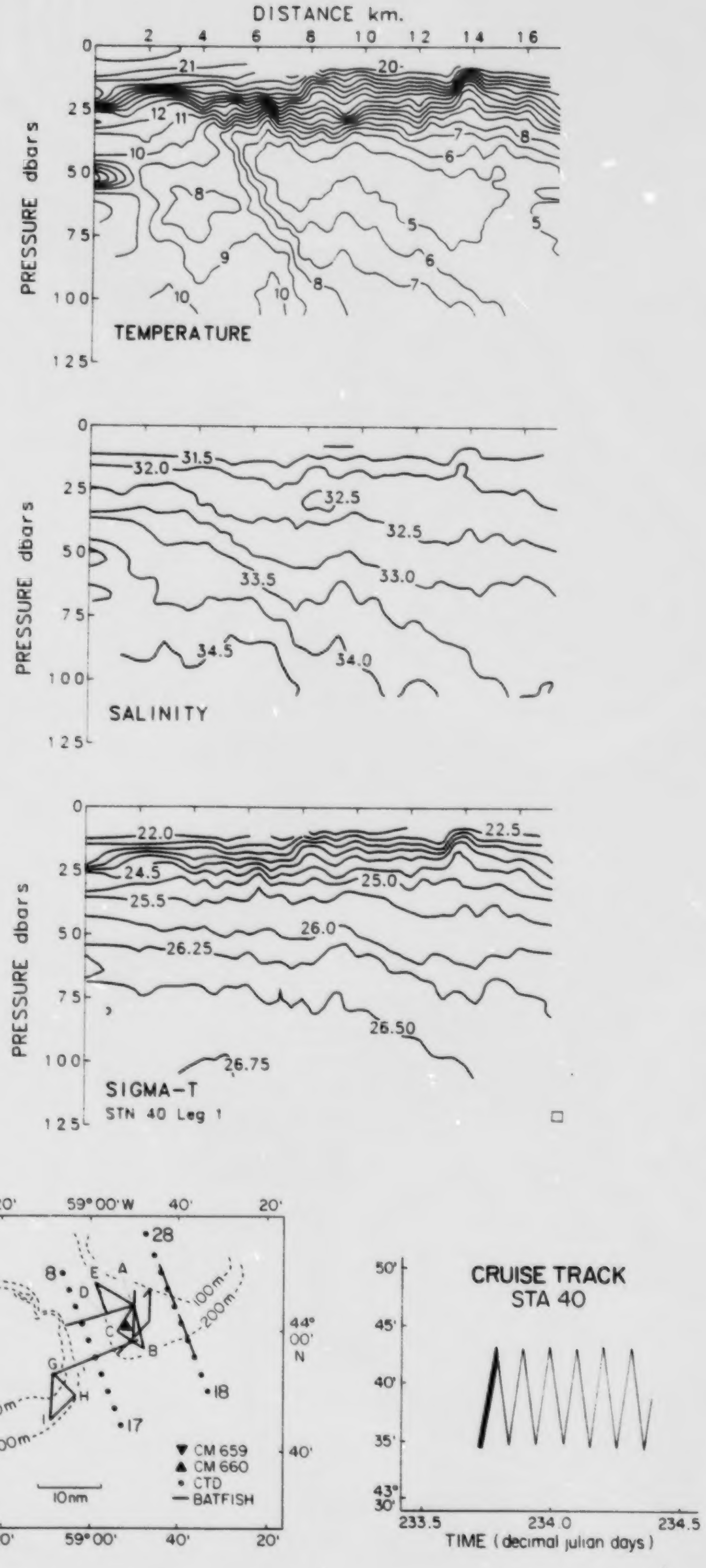

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
PRESSURE dbars
SIGMA-T
STN 40 Leg 1
59°00'W
44°
00'
N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 40
TIME (decimal julian days)

Fig. 16

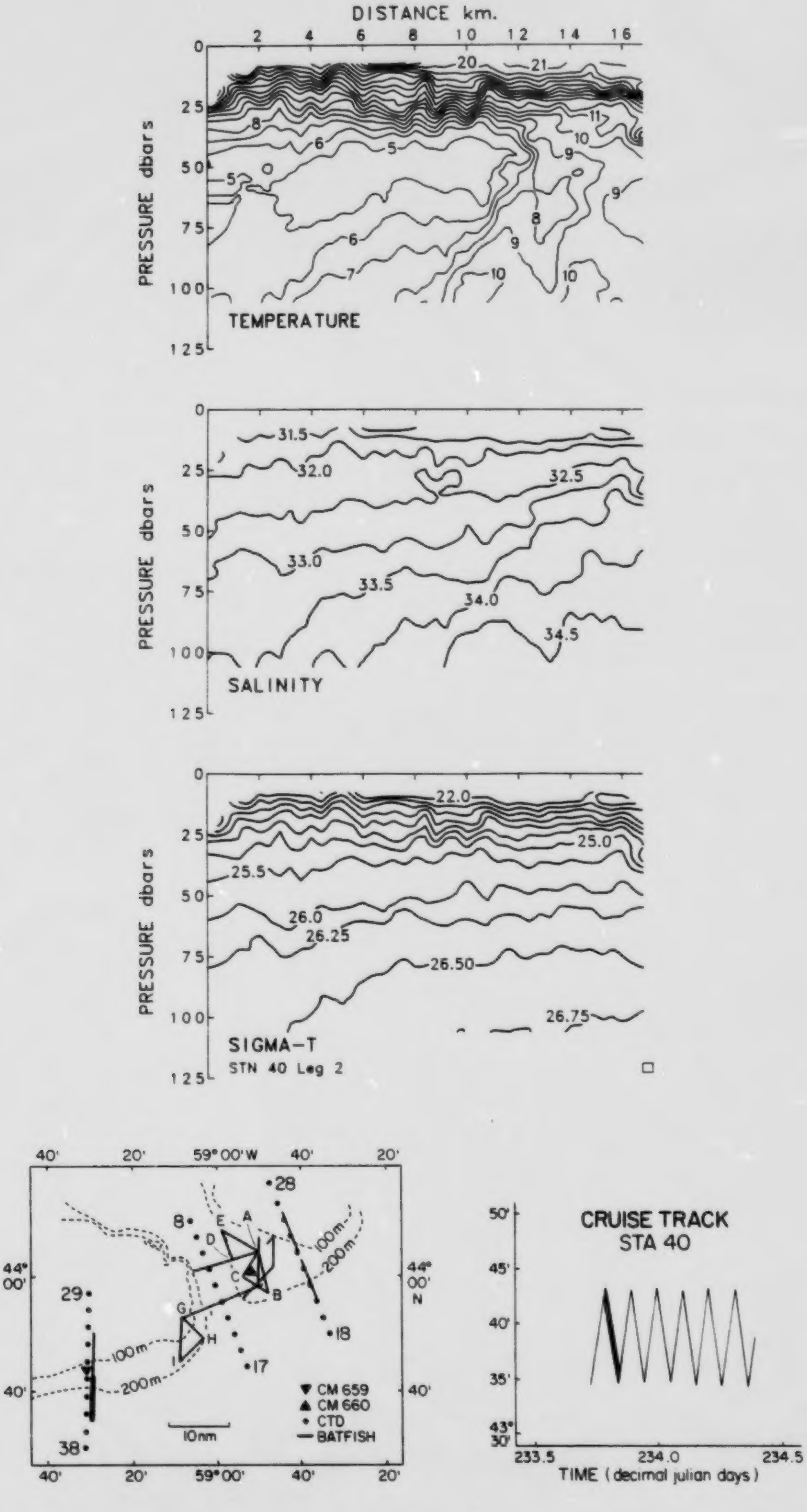
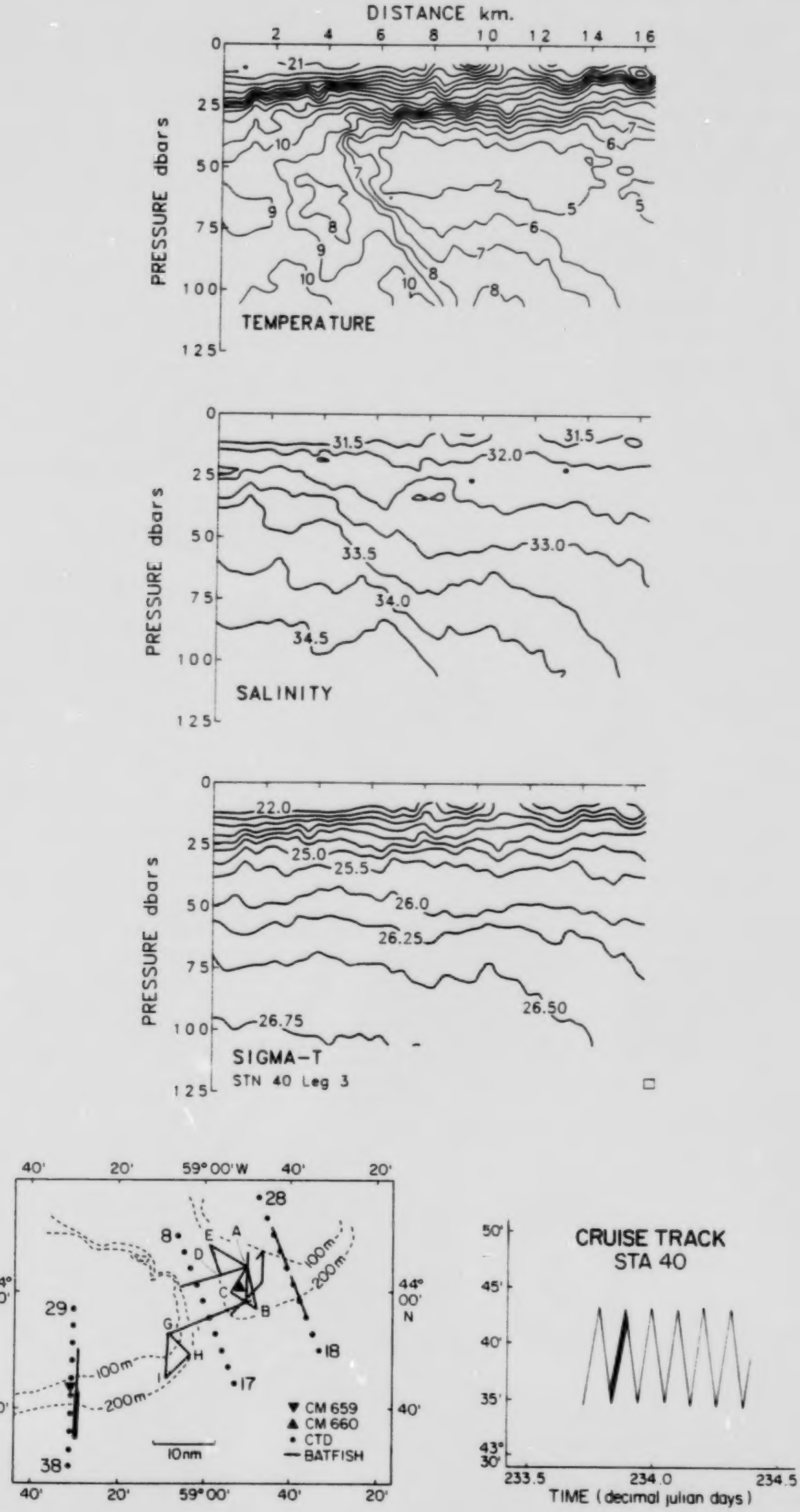

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 40 Leg 2
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 40
TIME (decimal julian days)

Fig. 17



DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 40 Leg 3
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
59°00'W
44° 00' N
CRUISE TRACK
STA 40
TIME (decimal julian days)

Fig. 18

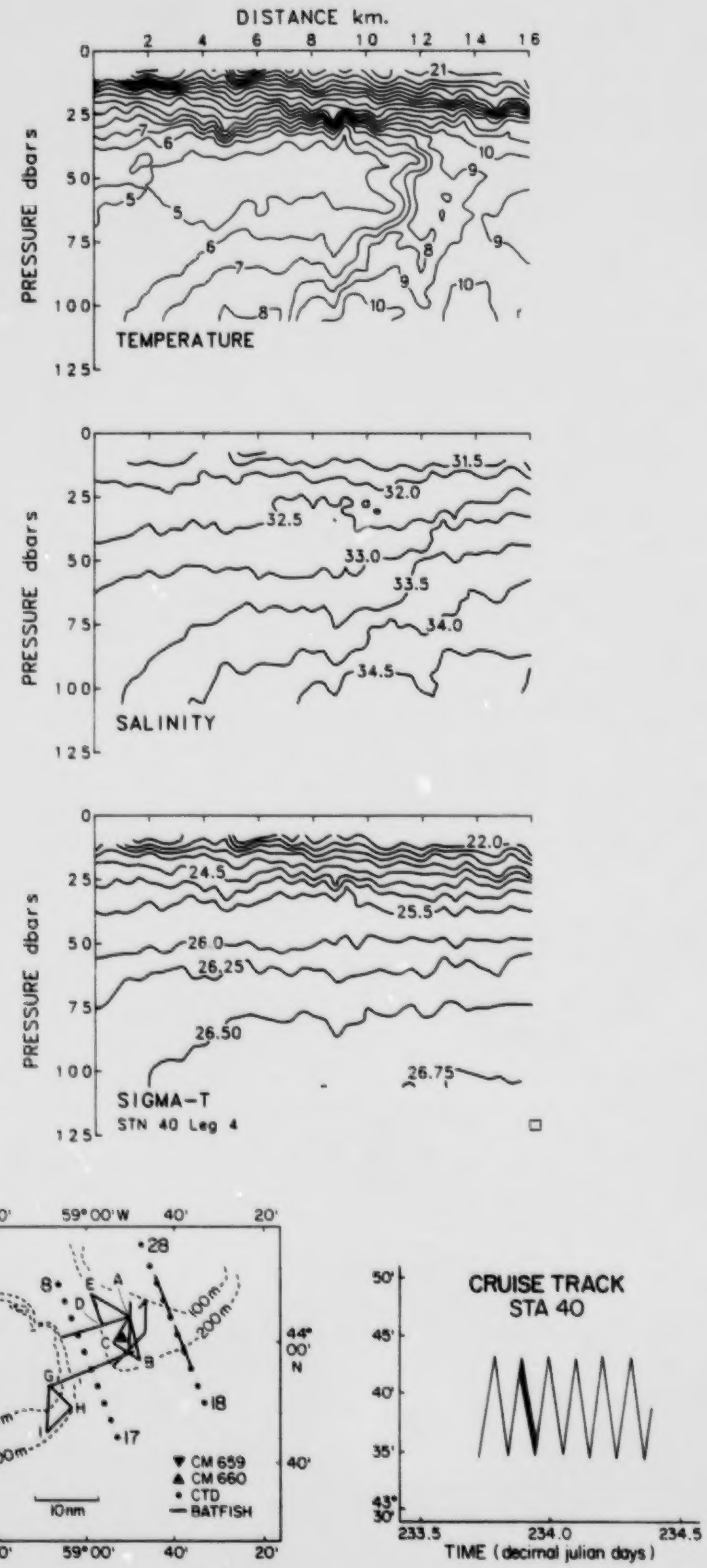
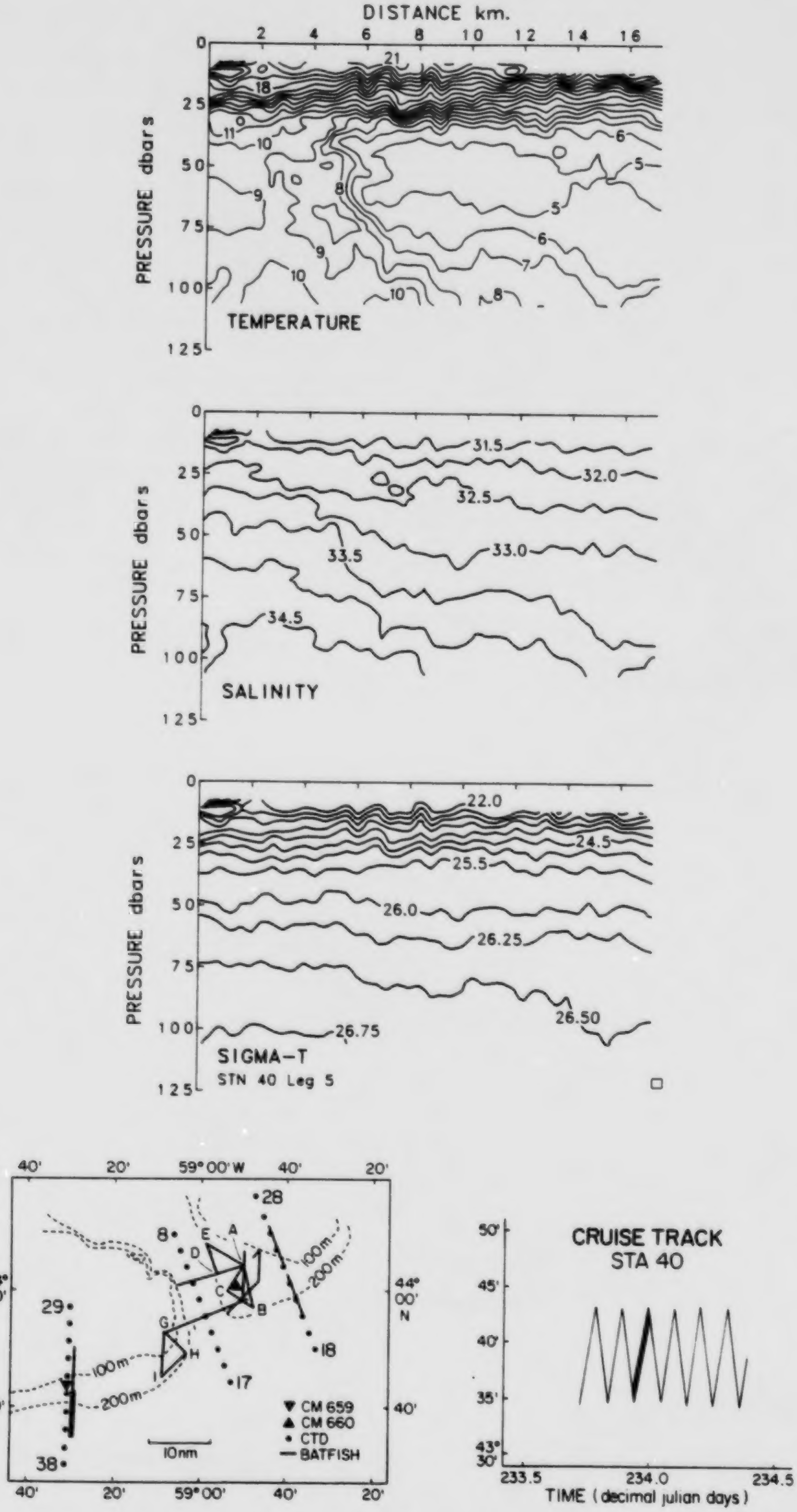
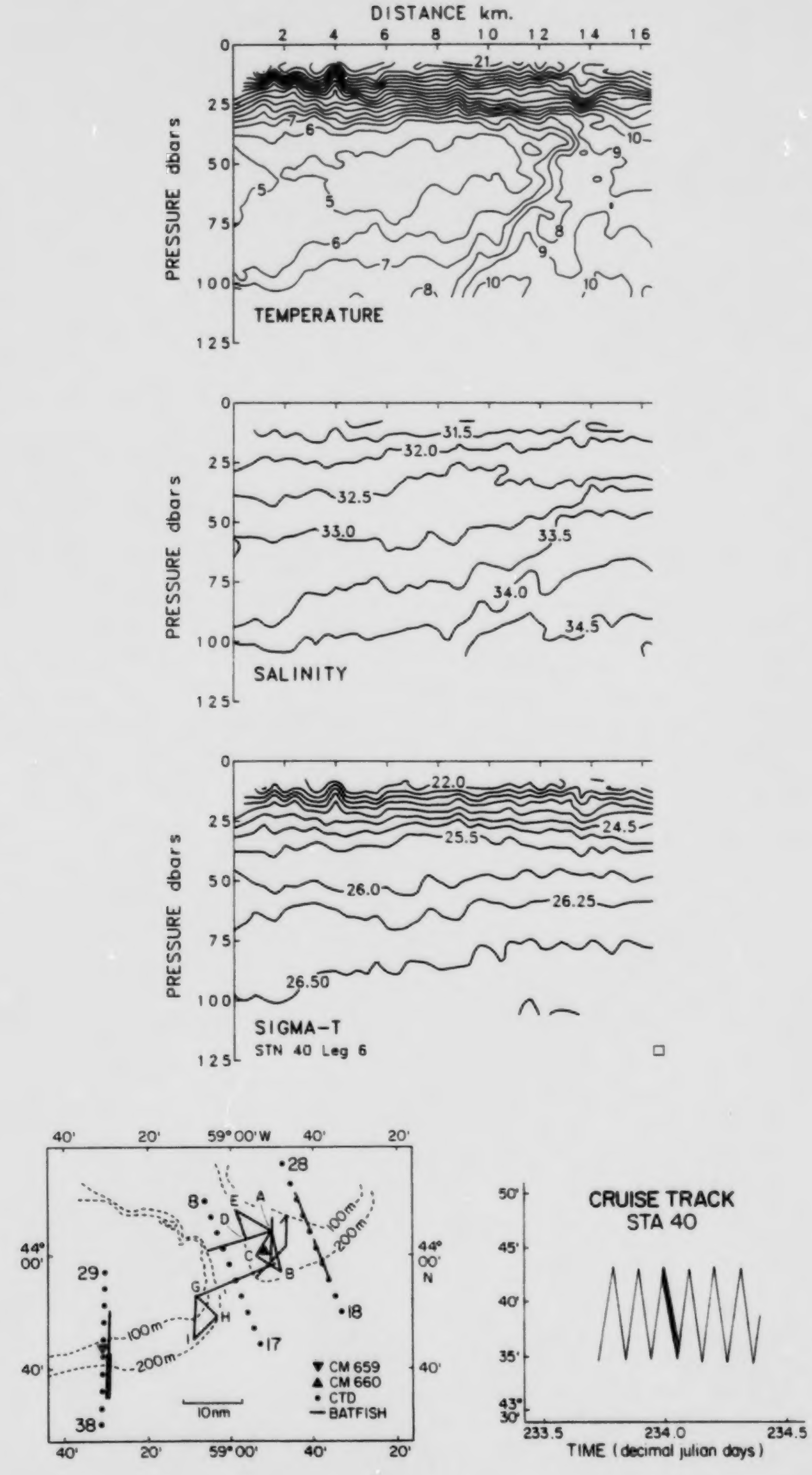

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 40 Leg 4
59°00'W
59°00'
44° 00'
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 40
TIME (decimal julian days)

Fig. 19



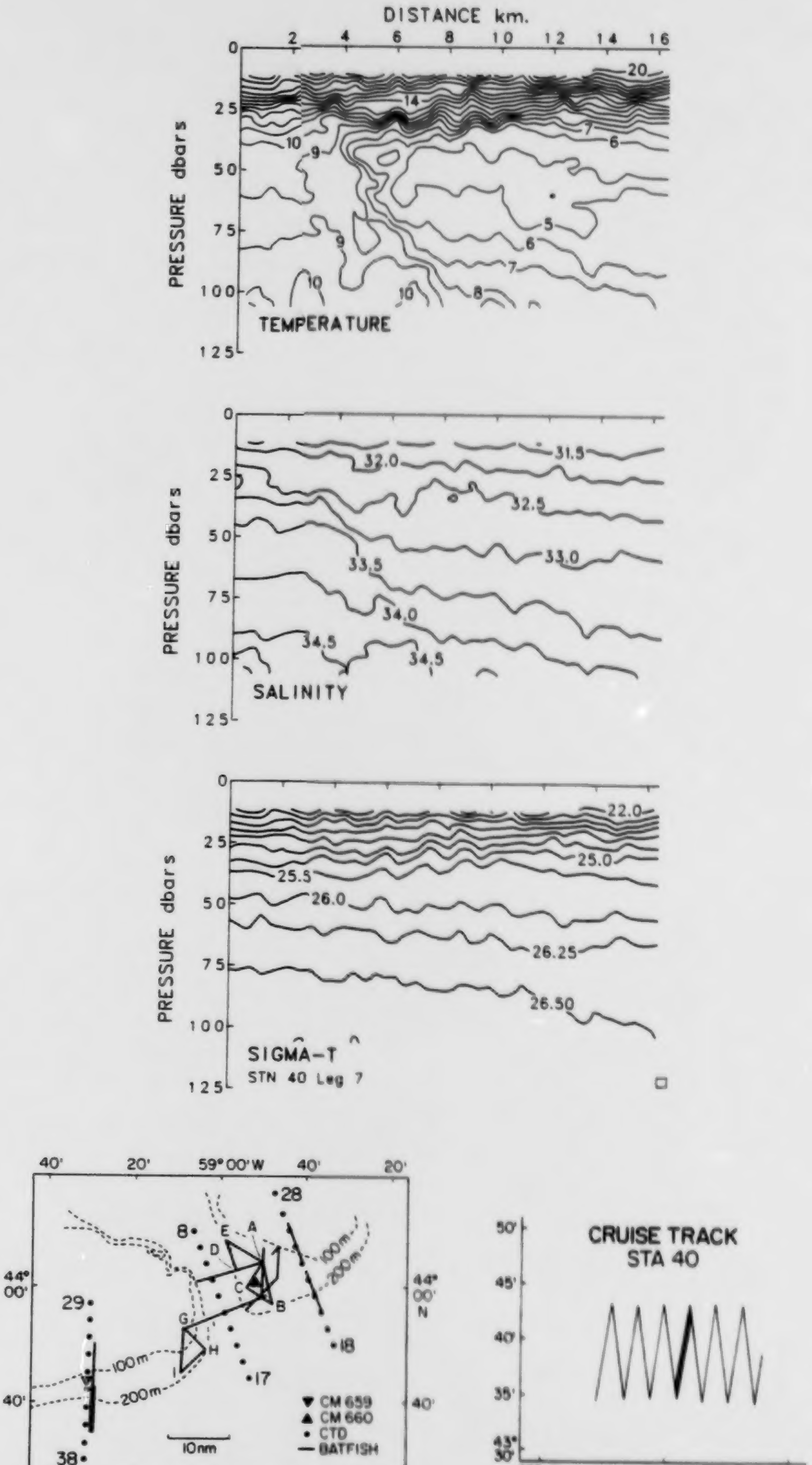
DISTANCE km.
2 4 6 8 10 12 14 16
0
25
50
75
100
125
PRESSURE dbars
21
18
11
10
9
8
6
5
7
TEMPERATURE
31.5
32.0
32.5
33.0
33.5
34.5
SALINITY
22.0
24.5
25.5
26.0
26.25
26.50
26.75
SIGMA-T
STN 40 Leg 5
40' 20' 59°00'W 40' 20'
44° 00'
44° 00' N
40'
28
8
E
A
D
C
B
29
G
H
I
18
17
38
100m
200m
10nm
▼ CM 659
▲ CM 660
• CTD
— BATFISH
40' 20' 59°00' 40' 20'
CRUISE TRACK
STA 40
50'
45'
40'
35'
43° 30'
233.5
234.0
234.5
TIME (decimal julian days)

Fig. 20



DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 40 Leg 6
CRUISE TRACK
STA 40
TIME (decimal julian days)
CM 659
CM 660
CTD
BATFISH
10nm
59°00'W
44° 00' N

Fig. 21



DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 40 Leg 7
CRUISE TRACK
STA 40
TIME (decimal julian days)
59°00'W
44° 00'
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m

Fig. 22

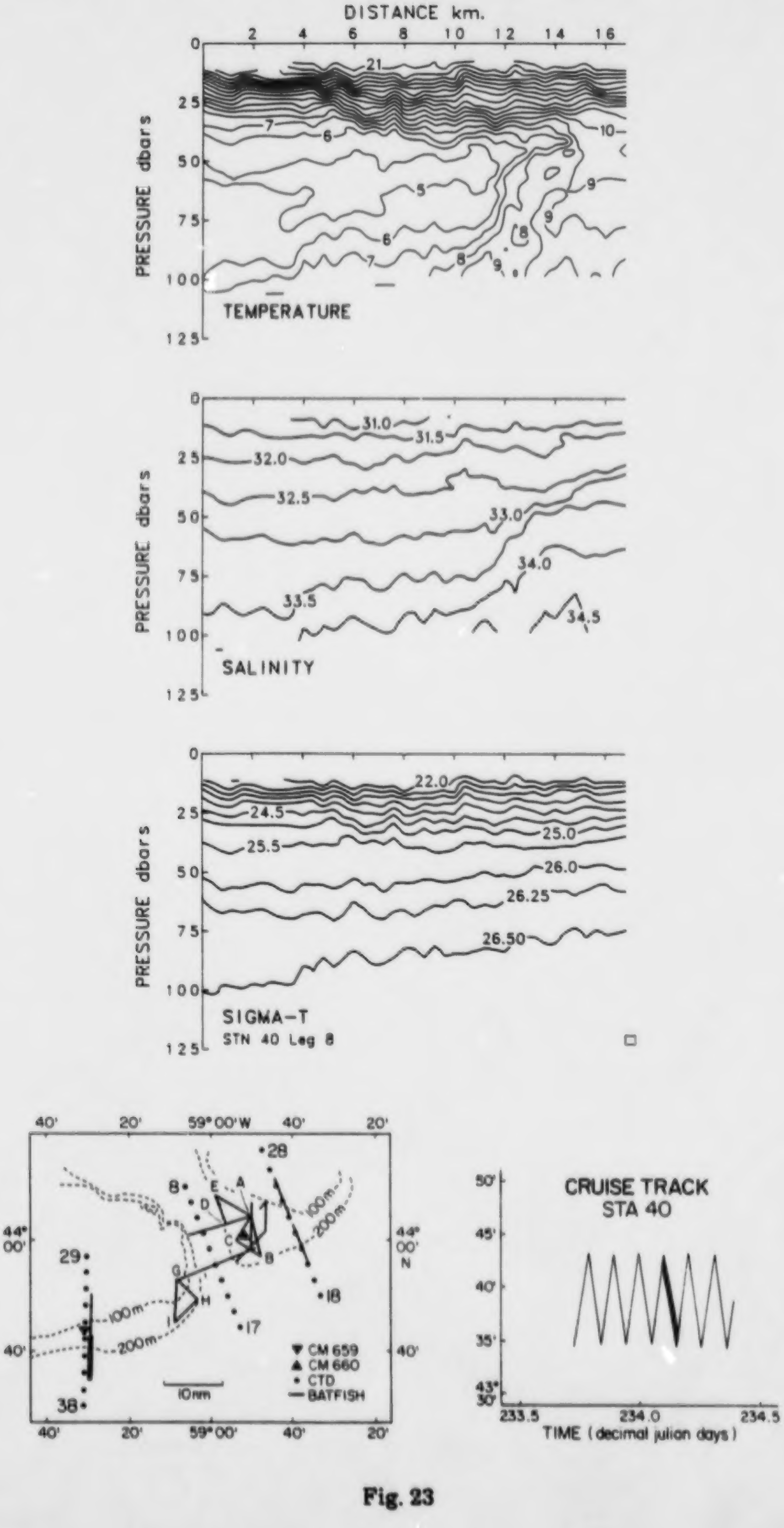
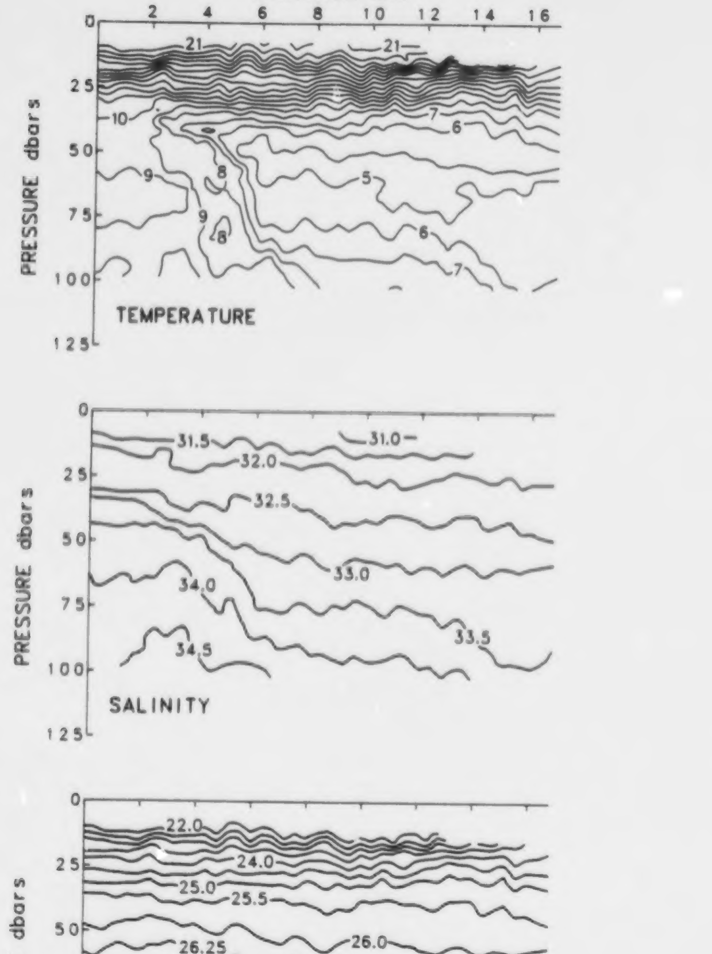

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 40 Leg 8
59° 00' W
44° 00'
44° 00' N
40'
20'
100m
200m
10nm
CM 659
CM 660
CTD
BATFISH
CRUISE TRACK
STA 40
TIME (decimal julian days)

Fig. 23



DISTANCE km.
2 4 6 8 10 12 14 16
PRESSURE dbars
0 25 50 75 100 125
21
10
9
8
7
6
5
TEMPERATURE
31.5
31.0
32.0
32.5
33.0
34.0
33.5
34.5
SALINITY
22.0
24.0
25.0
25.5
26.25
26.0
26.50
SIGMA-T
STN 40 Leg 9
40' 20' 59°00'W 40' 20'
44° 00'
44° 00' N
40'
28
29
38
17
18
100m
200m
A B C D E G H I
CM 659
CM 660
CTD
BATFISH
10nm
CRUISE TRACK
STA 40
50'
45'
40'
35'
43° 30'
233.5
234.0
234.5
TIME (decimal julian days)

Fig. 24

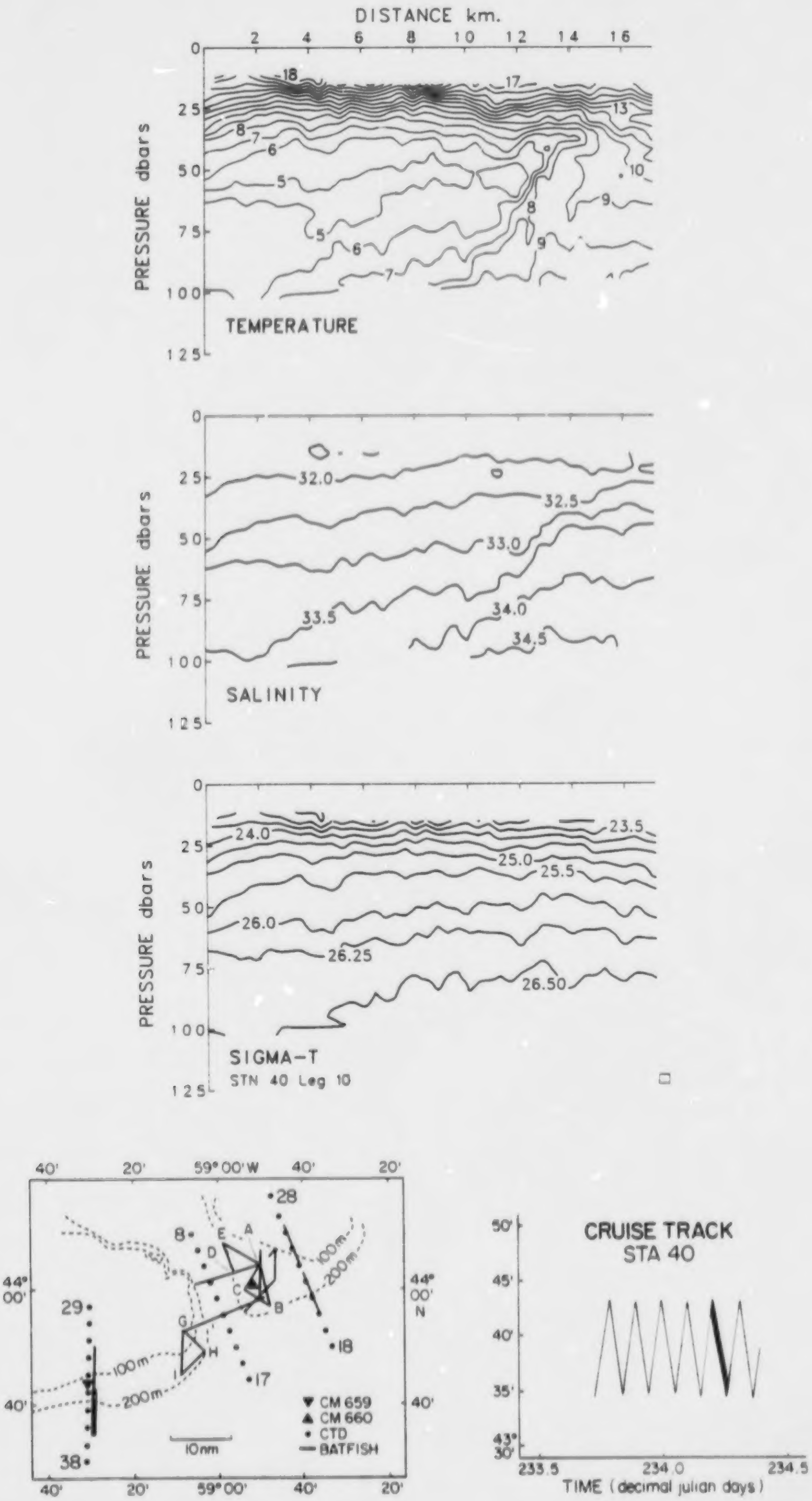

DISTANCE km.
2 4 6 8 10 12 14 16
PRESSURE dbars
0 25 50 75 100 125
18 17 13 8 7 6 5 10 9
TEMPERATURE
32.0 32.5 33.0 33.5 34.0 34.5
SALINITY
24.0 23.5 25.0 25.5 26.0 26.25 26.50
SIGMA-T
STN 40 Leg 10
40' 20' 59° 00' W 40' 20'
44° 00' N
40'
28 8 29 18 17 38
A B C D E G H I
100m 200m
10nm
CM 659
CM 660
CTD
BATFISH
CRUISE TRACK
STA 40
50' 45' 40' 35' 43° 30'
233.5 234.0 234.5
TIME (decimal julian days)

Fig. 25

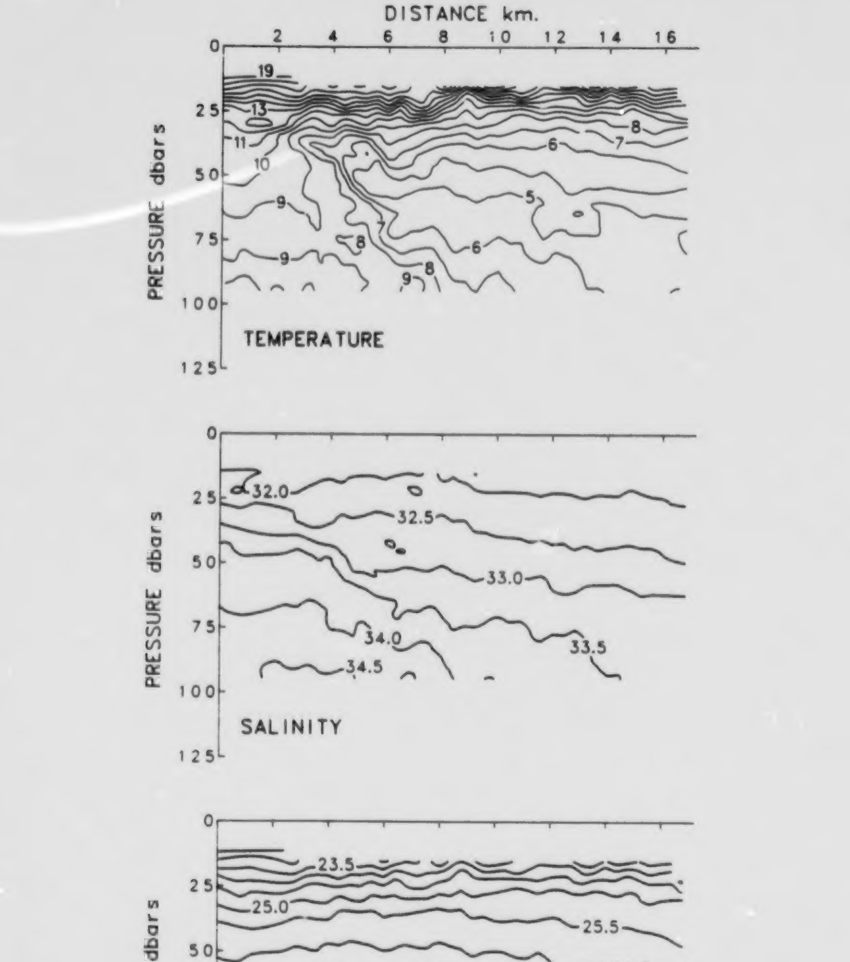

DISTANCE km.
2 4 6 8 10 12 14 16
PRESSURE dbars
0 25 50 75 100 125
19 13 11 10 9 8 7 6 5
TEMPERATURE
32.0 32.5 33.0 34.0 33.5 34.5
SALINITY
23.5 25.0 25.5 26.0 26.25 26.50
SIGMA-T
STN 40 Leg 11
40' 20' 59°00'W 40' 20'
44° 00' N
28 8 29 38 17 18
A B C D E G H I
100m 200m
10nm
CM 659
CM 660
CTD
BATFISH
CRUISE TRACK
STA 40
50' 45' 40' 35' 43° 30'
233.5 234.0 234.5
TIME (decimal julian days)

Fig. 26

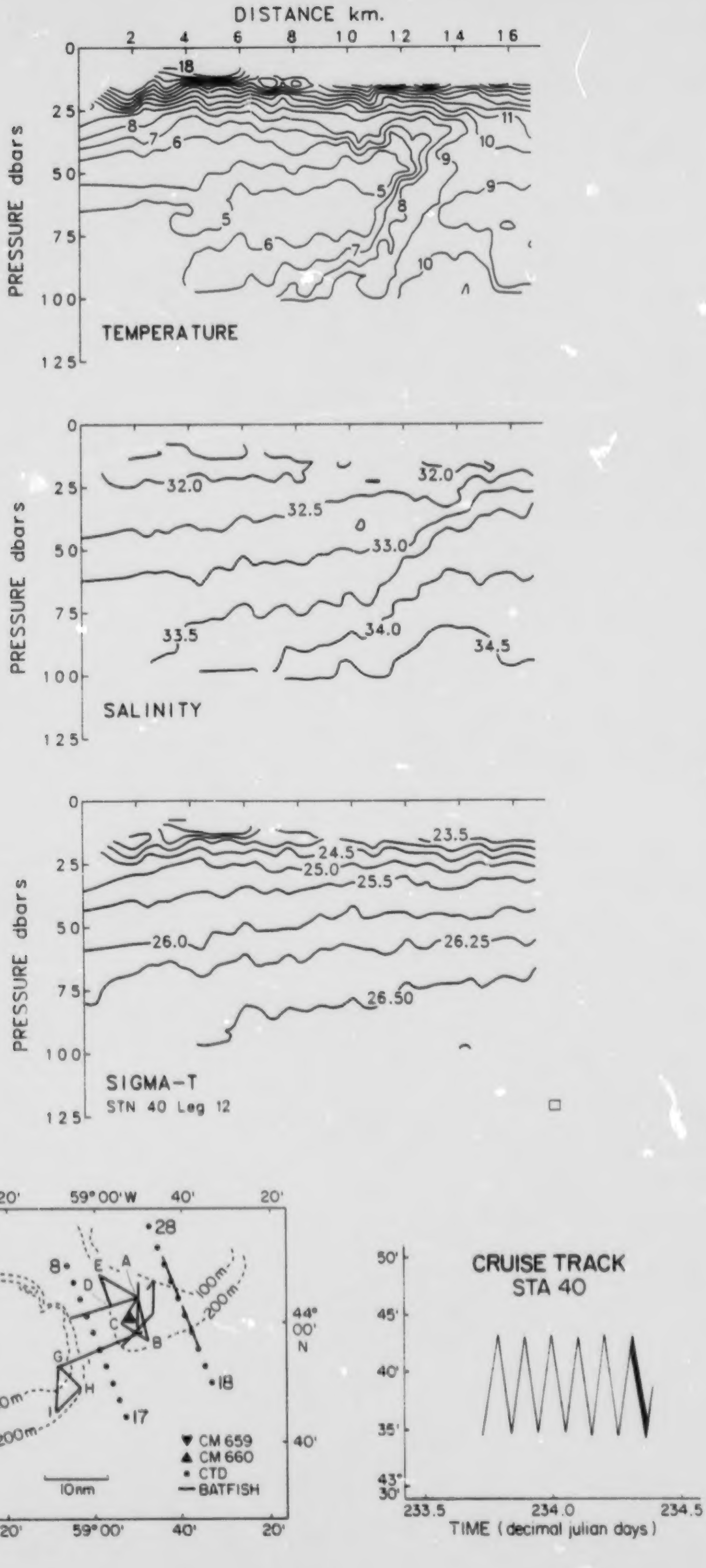
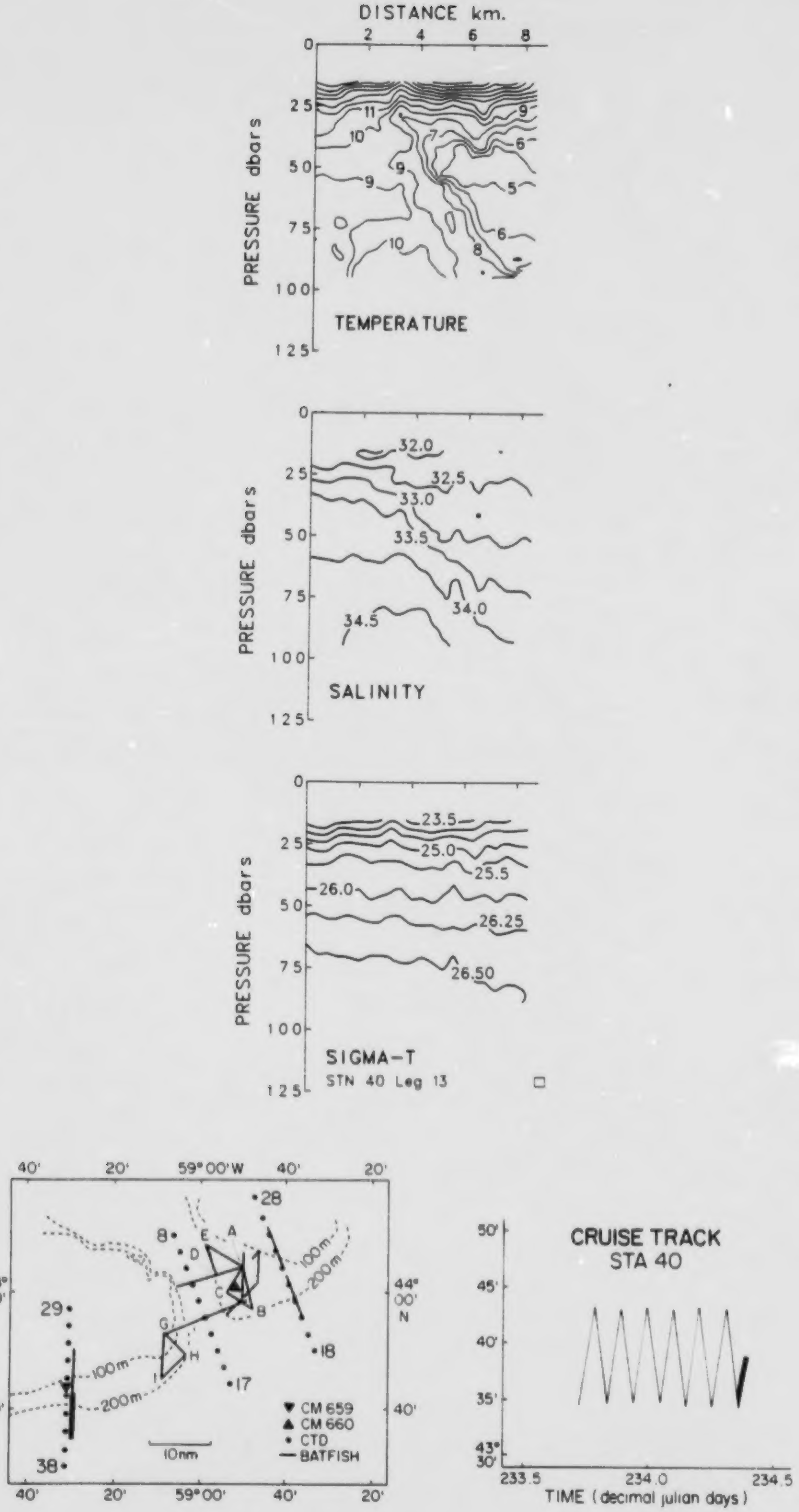

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 40 Leg 12
59° 00' W
44° 00' N
100m
200m
CM 659
CM 660
CTD
BATFISH
10nm
CRUISE TRACK
STA 40
TIME (decimal julian days)

Fig. 27

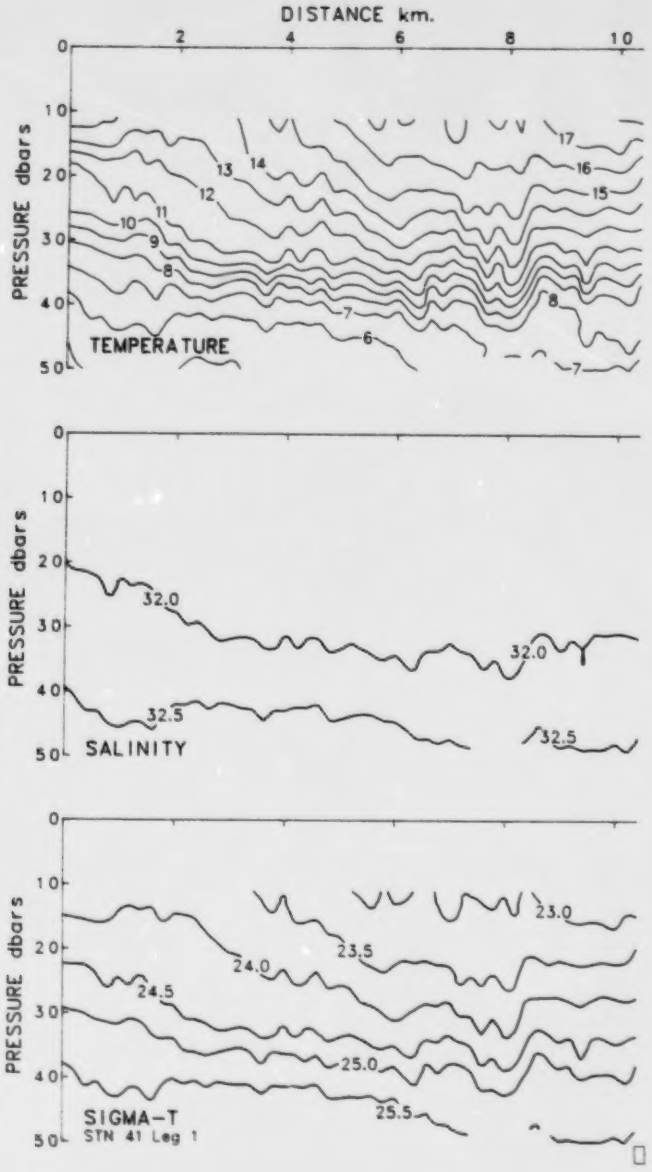


DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 40 Leg 13
59°00'W
44° 00'
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 40
TIME (decimal julian days)
233.5
234.0
234.5

Fig. 28

Figures 29-45.

BATFISH stations 41: 17 sections of Temperature, Salinity and Sigma-t vs. pressure, location map and latitude vs. time plot. Leg 14 is the last transect along the predetermined line. Legs 15, 16 and 17 are from the transit between the south end of station 41 and the beginning or west end of station 42. Leg 15 is mainly E-W, Leg 16 and 17 are more N-S.


DISTANCE km.
2
4
6
8
10
0
10
20
30
40
50
PRESSURE dbars
17
16
15
14
13
12
11
10
9
8
7
6
TEMPERATURE
32.0
32.5
SALINITY
23.0
23.5
24.0
24.5
25.0
25.5
SIGMA-T
STN 41 Leg 1

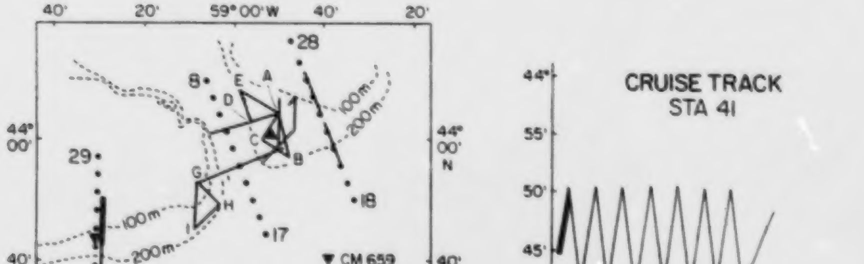

40'
20'
59° 00' W
44° 00'
44° 00' N
28
29
38
18
17
8
A
B
C
D
E
G
H
I
100m
200m
▼ CM 659
▲ CM 660
• CTD
— BATFISH
10nm
CRUISE TRACK
STA 41
44°
55'
50'
45'
40'
234.5
235.0
235.5
TIME (decimal julian days)

Fig. 29

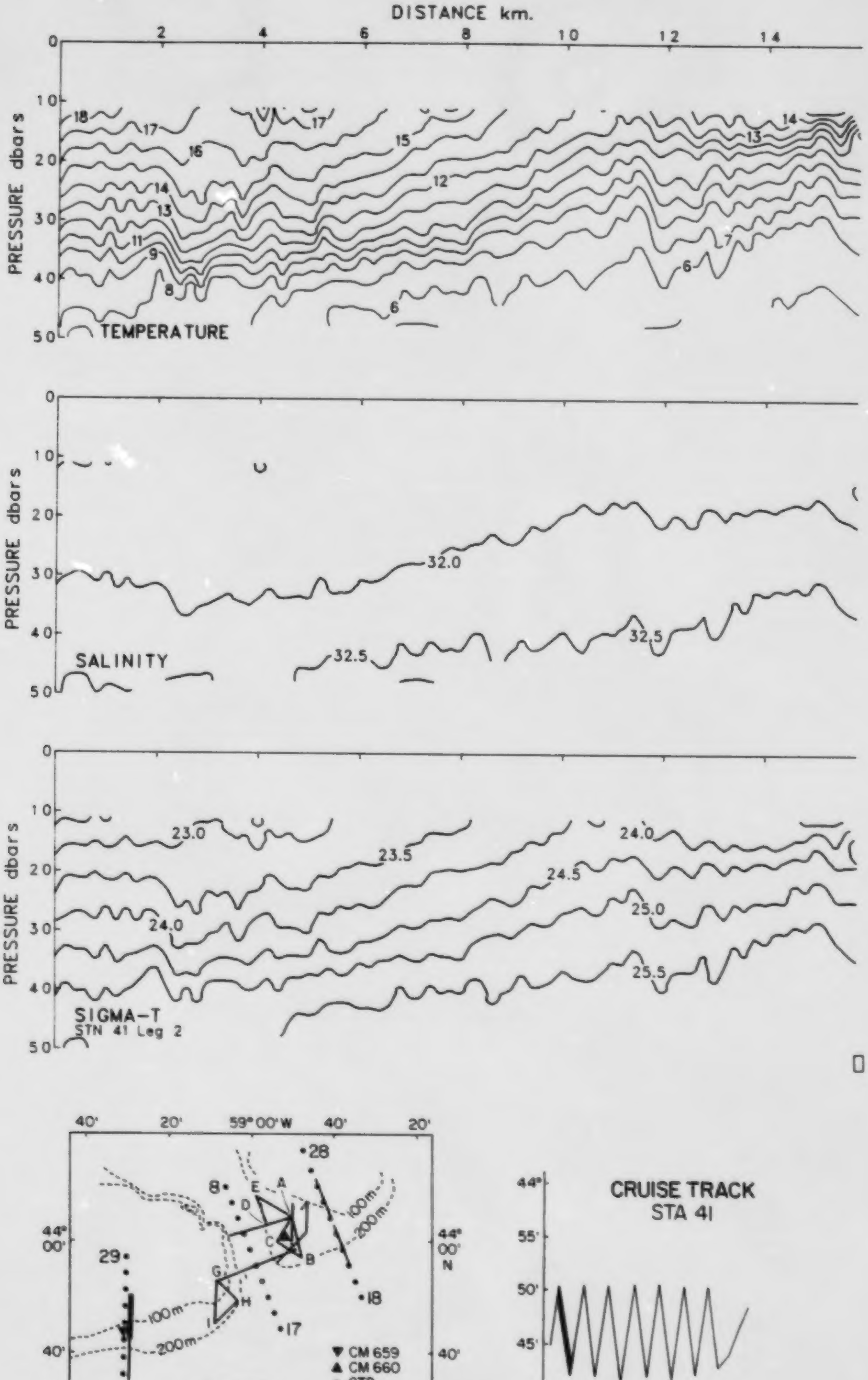

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
32.0
32.5
SIGMA-T
STN 41 Leg 2
23.0
23.5
24.0
24.5
25.0
25.5
59°00'W
44° 00'
44° 00' N
100m
200m
10nm
▼ CM 659
▲ CM 660
• CTD
— BATFISH
CRUISE TRACK
STA 41
TIME (decimal julian days)

Fig. 30

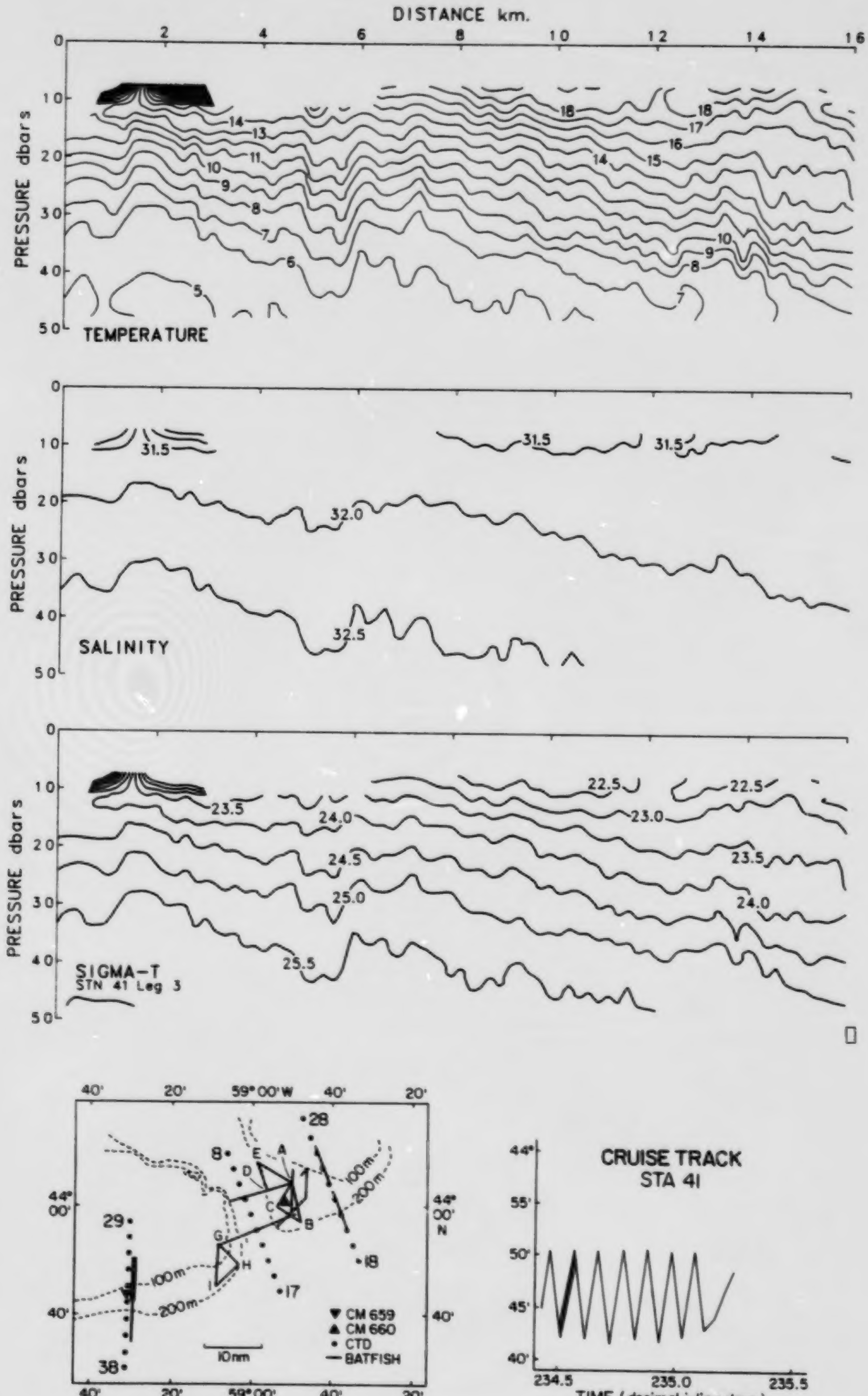

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 41 Leg 3
CRUISE TRACK
STA 41
TIME (decimal julian days)
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
59° 00' W
44° 00' N

Fig. 31

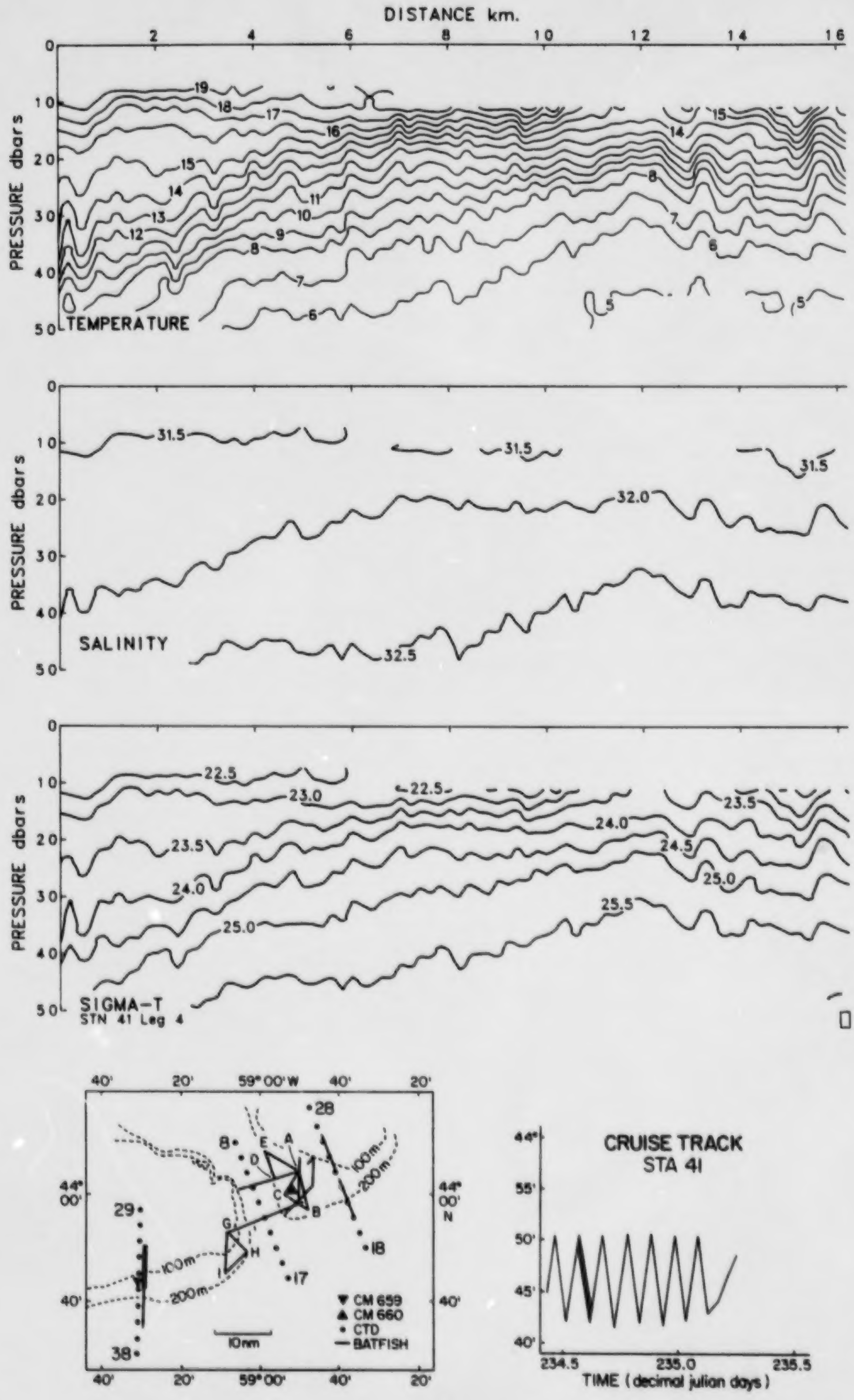

DISTANCE km.
0
2
4
6
8
10
12
14
16
PRESSURE dbars
10
20
30
40
50
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
TEMPERATURE
31.5
32.0
32.5
SALINITY
22.5
23.0
23.5
24.0
24.5
25.0
25.5
SIGMA-T
STN 41 Leg 4
40'
20'
59° 00' W
44° 00'
44° 00' N
28
29
38
17
18
8
A
B
C
D
E
G
H
I
100m
200m
10nm
▼ CM 659
▲ CM 660
• CTD
— BATFISH
59° 00'
CRUISE TRACK
STA 41
44°
55'
50'
45'
40'
234.5
235.0
235.5
TIME (decimal julian days)

Fig. 32

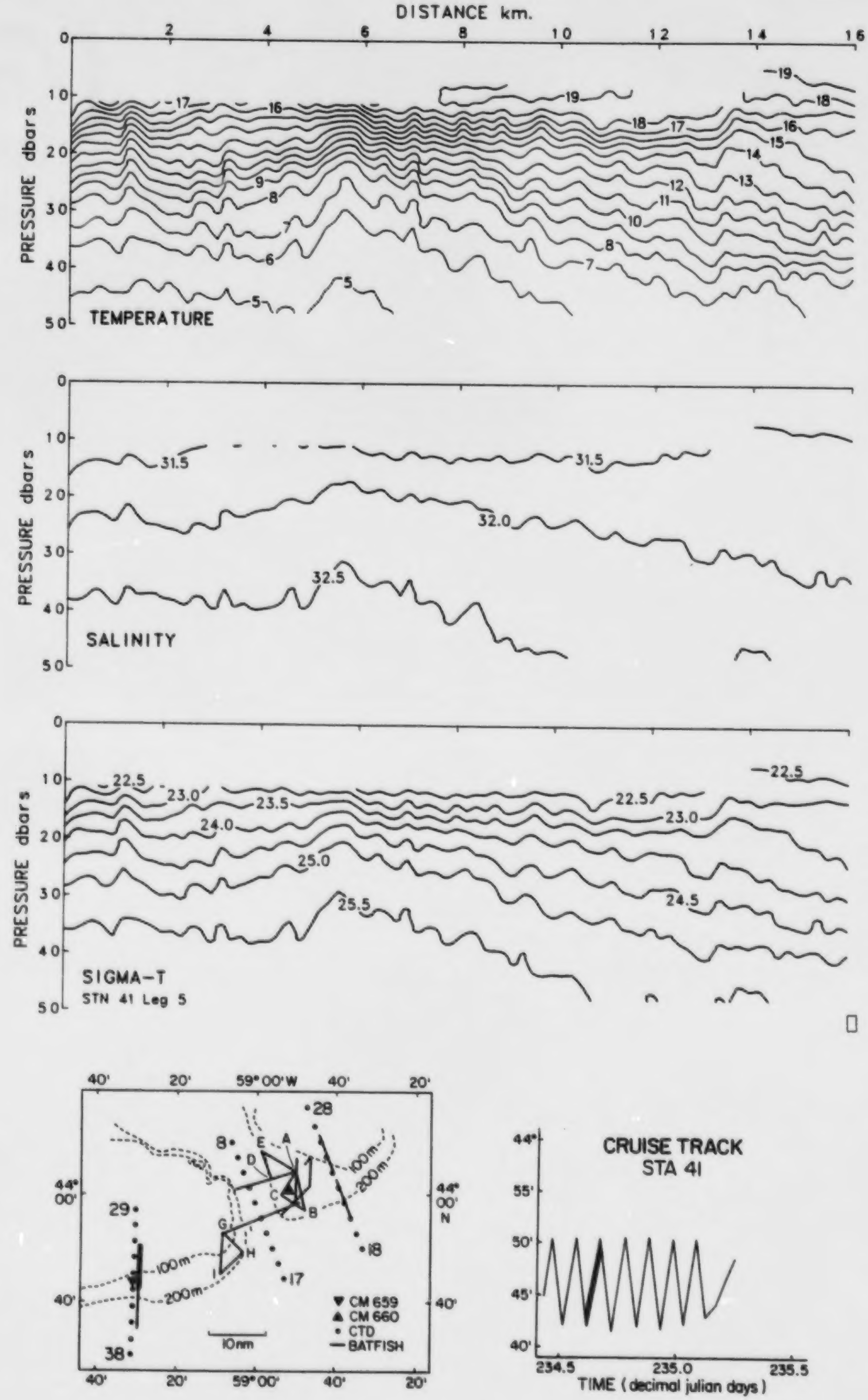

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 41 Leg 5
59°00'W
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 41
TIME (decimal julian days)

Fig. 33

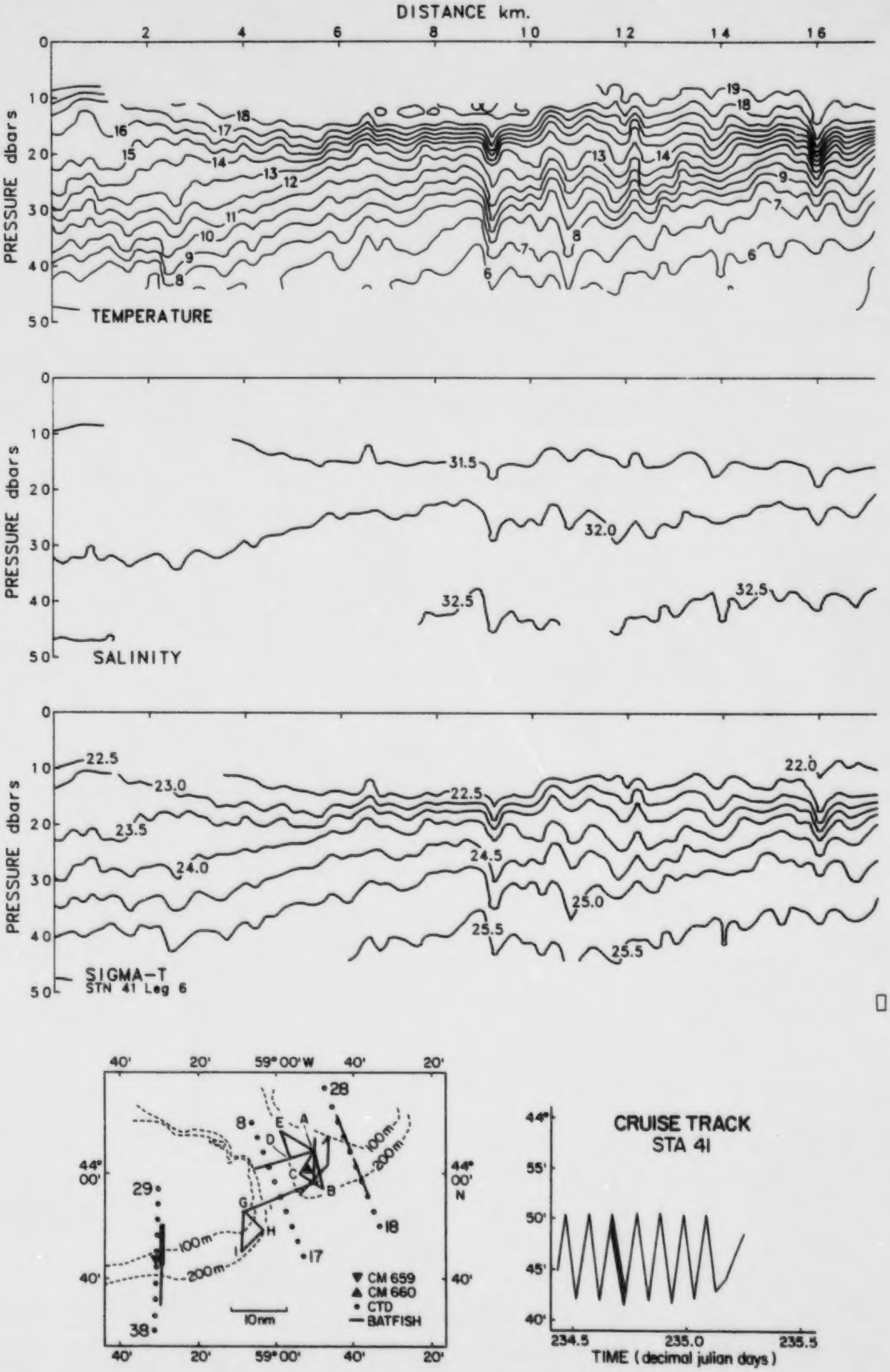

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 41 Leg 6
59°00'W
44° 00'
44° 00' N
▼ CM 659
▲ CM 660
• CTD
— BATFISH
10nm
100m
200m
CRUISE TRACK
STA 41
TIME (decimal julian days)

Fig. 34

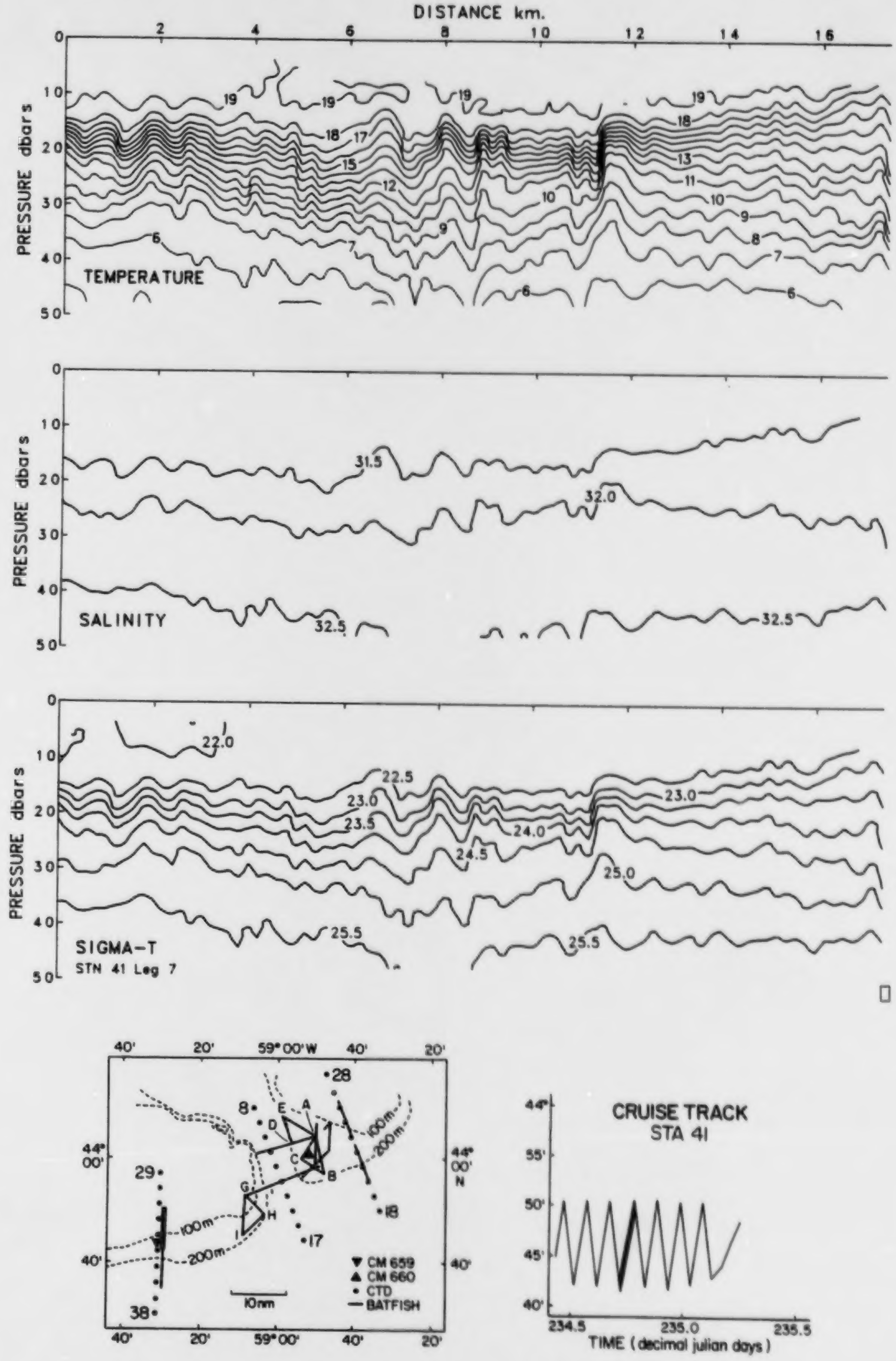
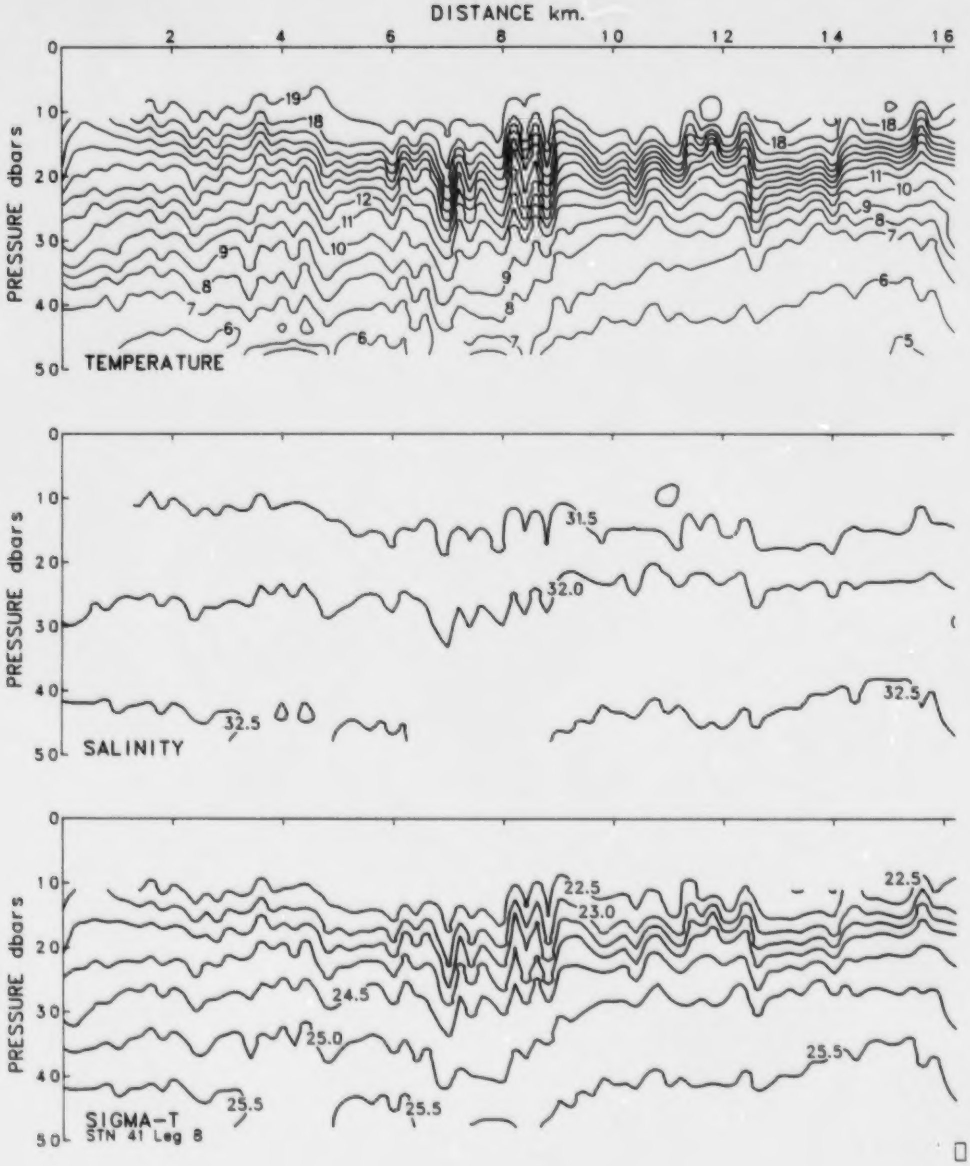
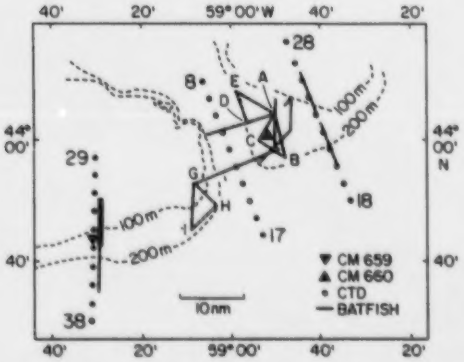

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 41 Leg 7
CRUISE TRACK
STA 41
TIME (decimal julian days)
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
59° 00'W
44° 00' N

Fig. 35


DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 41 Leg 8


59° 00' W
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m

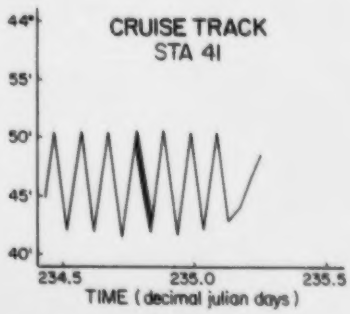

CRUISE TRACK
STA 41
TIME (decimal julian days)

Fig. 36

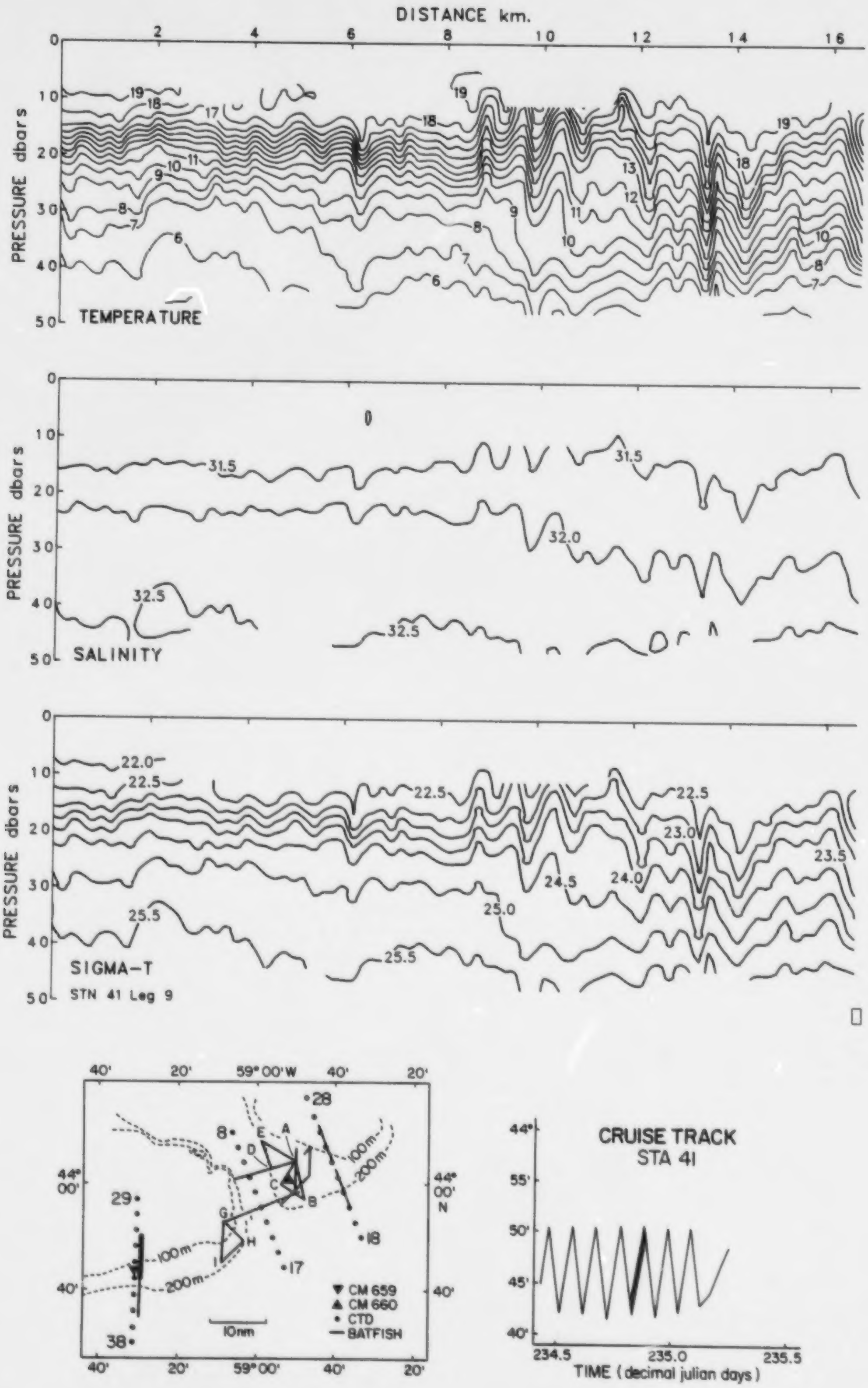

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 41 Leg 9
59° 00'W
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
CRUISE TRACK
STA 41
TIME (decimal julian days)

Fig. 37

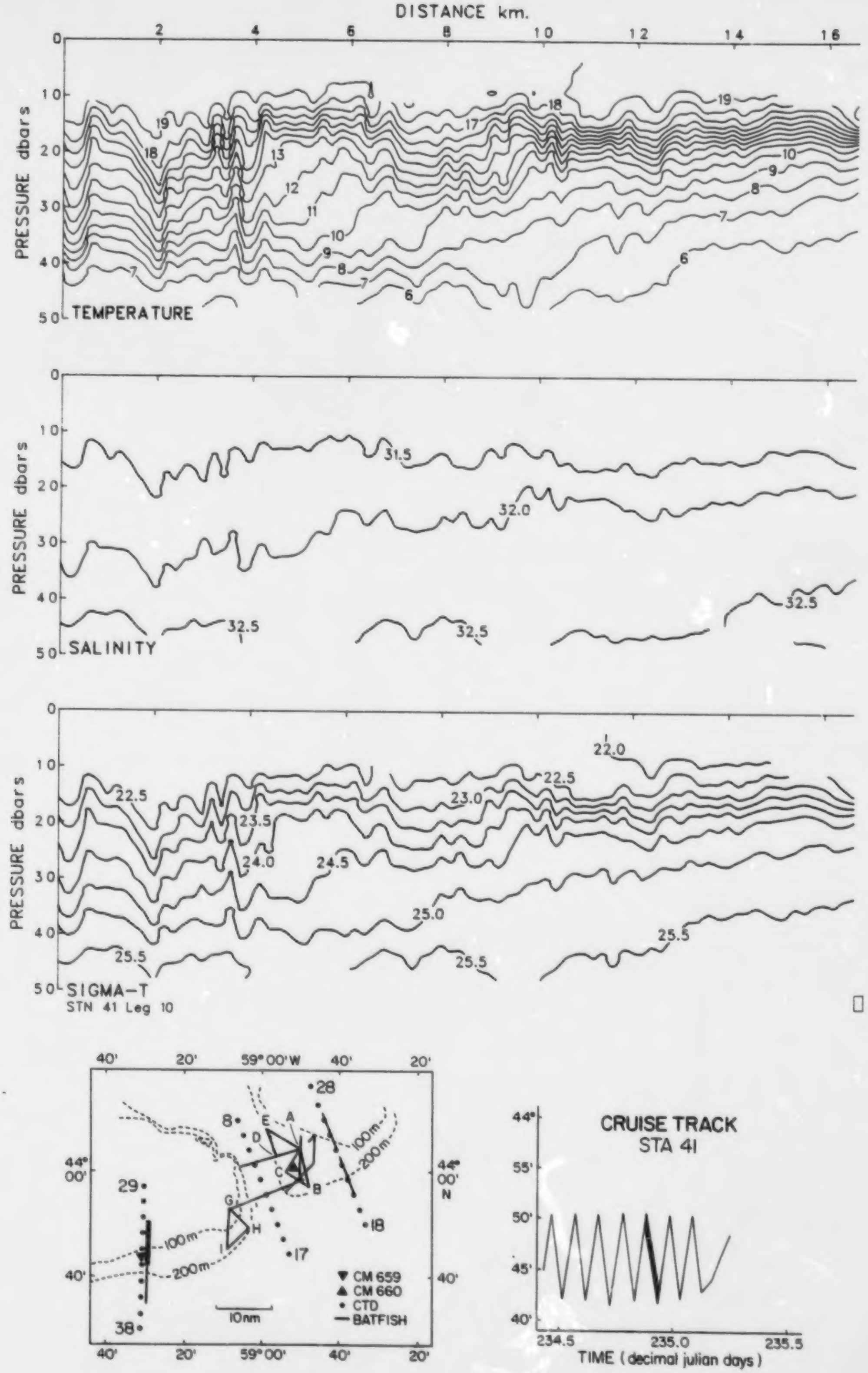

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 41 Leg 10
CRUISE TRACK
STA 41
TIME (decimal julian days)
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
59° 00' W
44° 00' N

Fig. 38

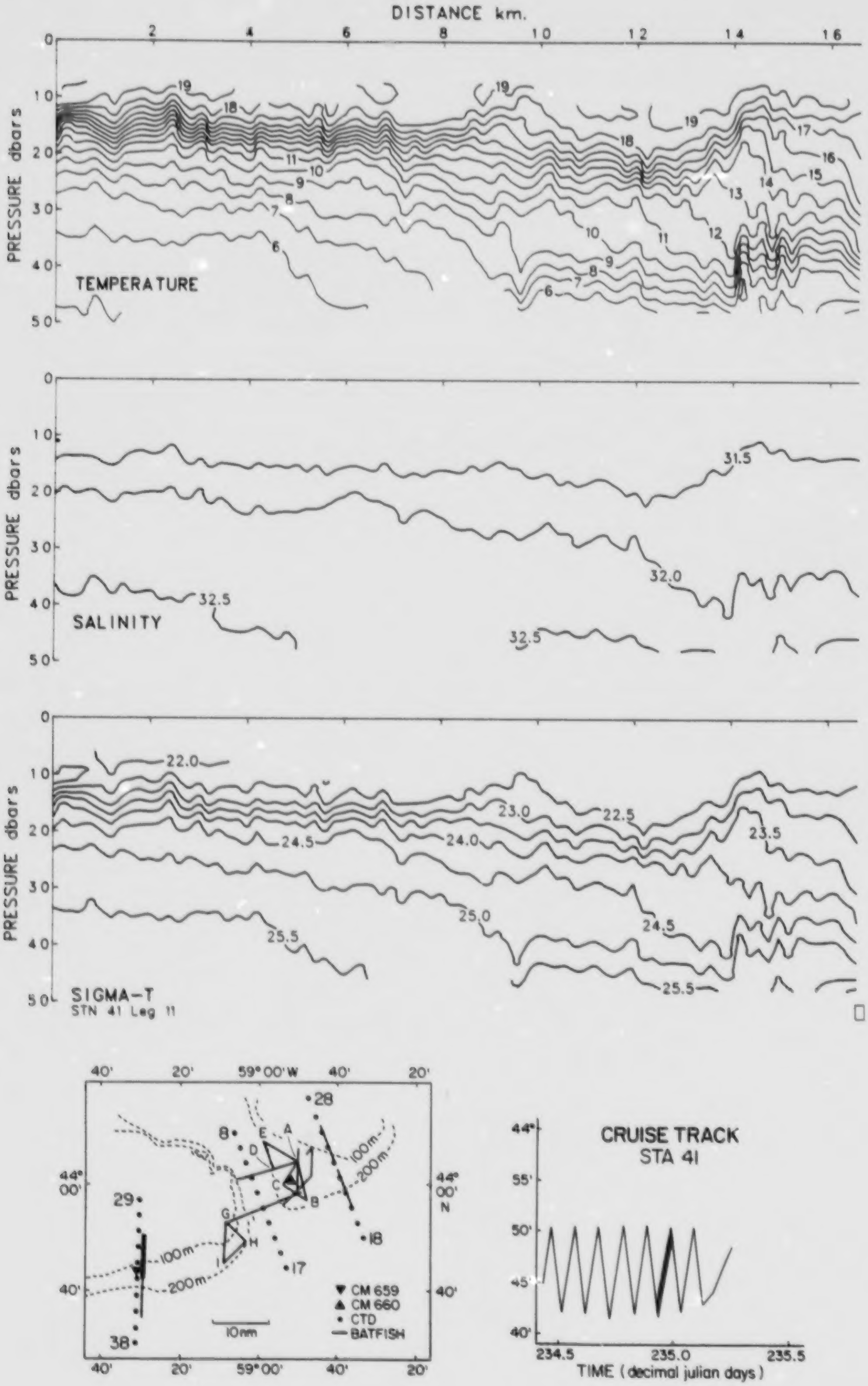

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 41 Leg 11
CM 659
CM 660
CTD
BATFISH
10nm
59° 00' W
44° 00' N
CRUISE TRACK
STA 41
TIME (decimal julian days)

Fig. 39

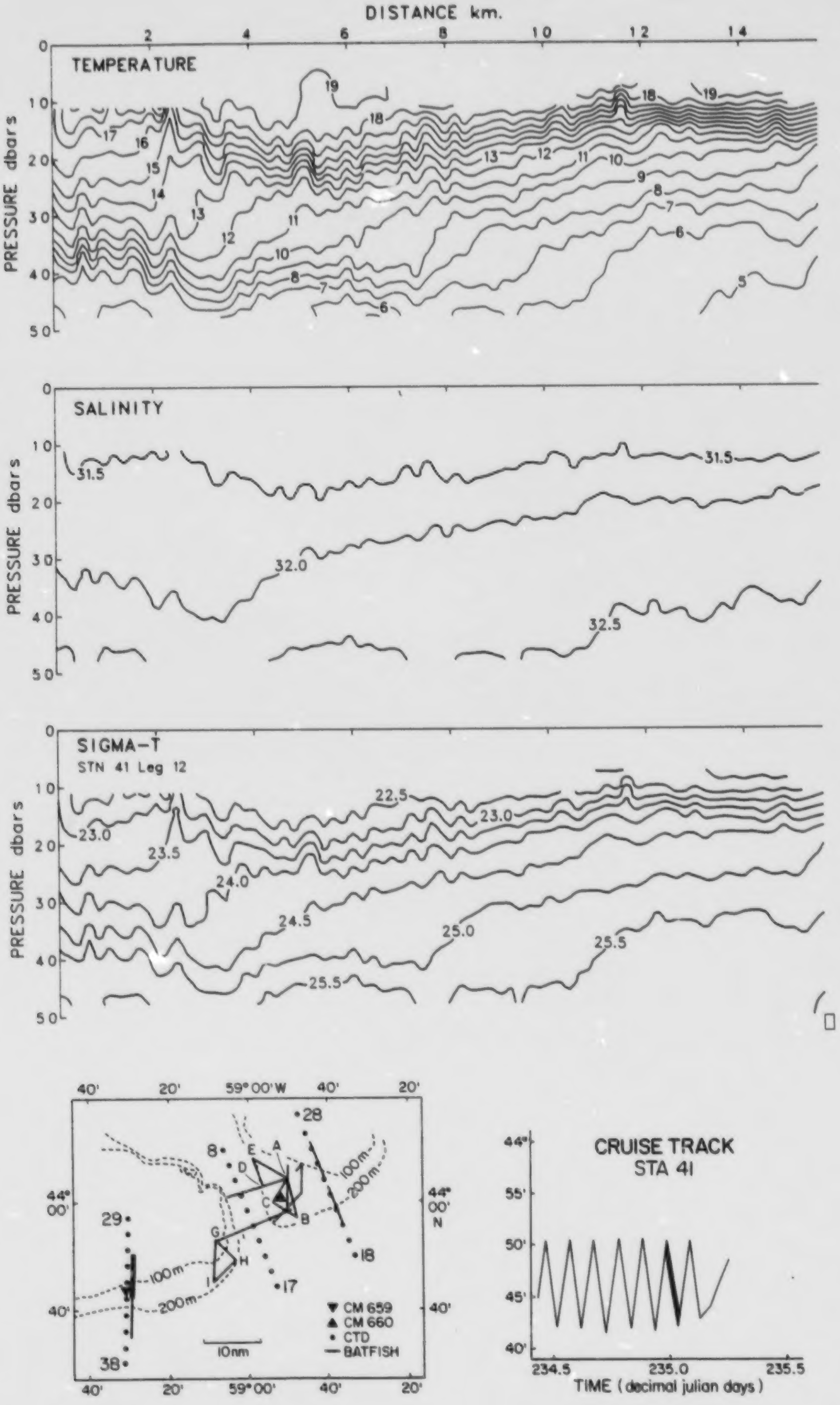

DISTANCE km.
TEMPERATURE
PRESSURE dbars
SALINITY
SIGMA-T
STN 41 Leg 12
CM 659
CM 660
CTD
BATFISH
10nm
59° 00' W
44° 00' N
100m
200m
CRUISE TRACK
STA 41
TIME (decimal julian days)

Fig. 40

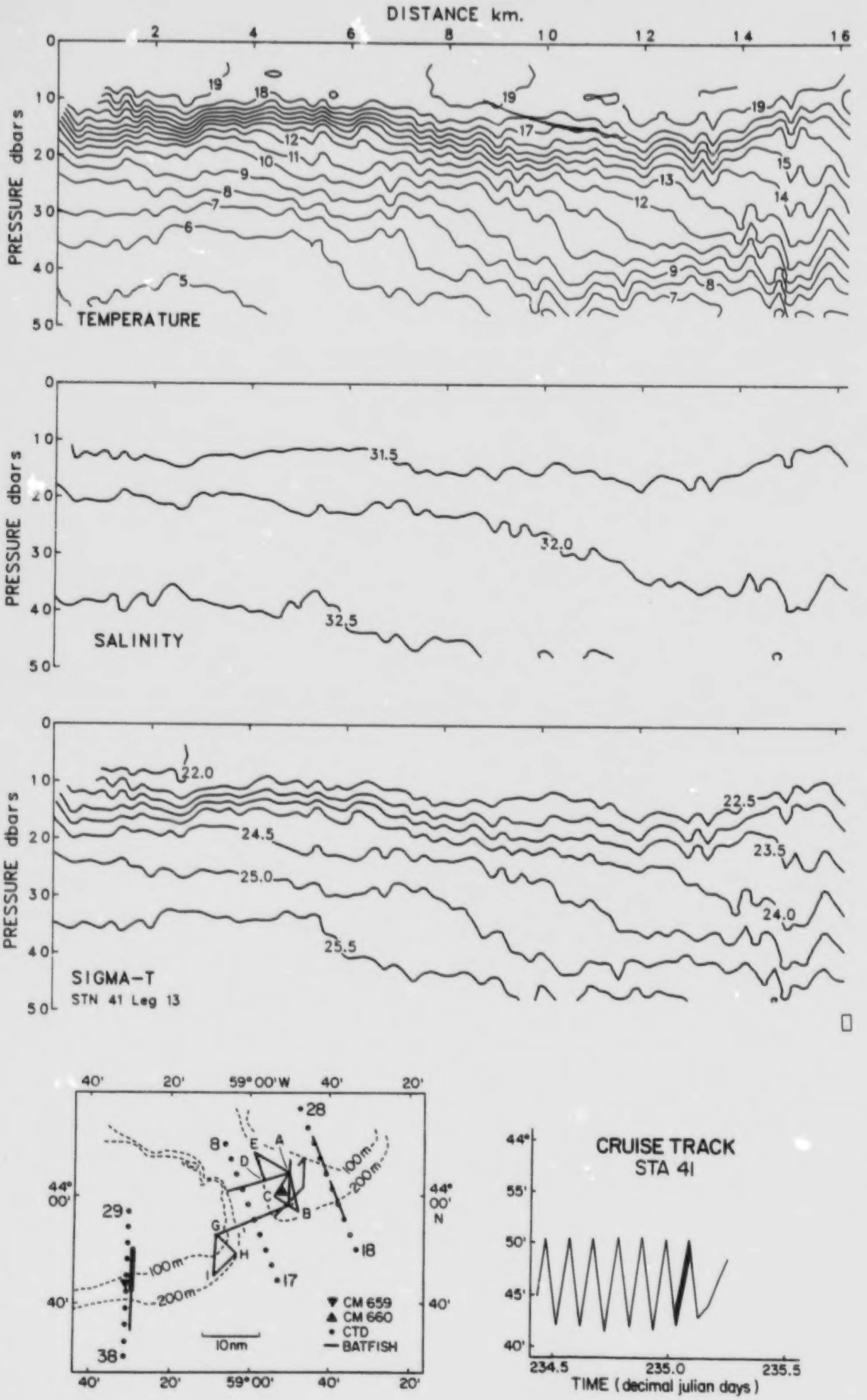

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 41 Leg 13
31.5
32.0
32.5
22.0
22.5
23.5
24.0
24.5
25.0
25.5
59° 00' W
44° 00'
44° 00' N
40'
20'
100m
200m
10nm
▼ CM 659
▲ CM 660
• CTD
— BATFISH
CRUISE TRACK
STA 41
TIME (decimal julian days)
234.5
235.0
235.5

Fig. 41

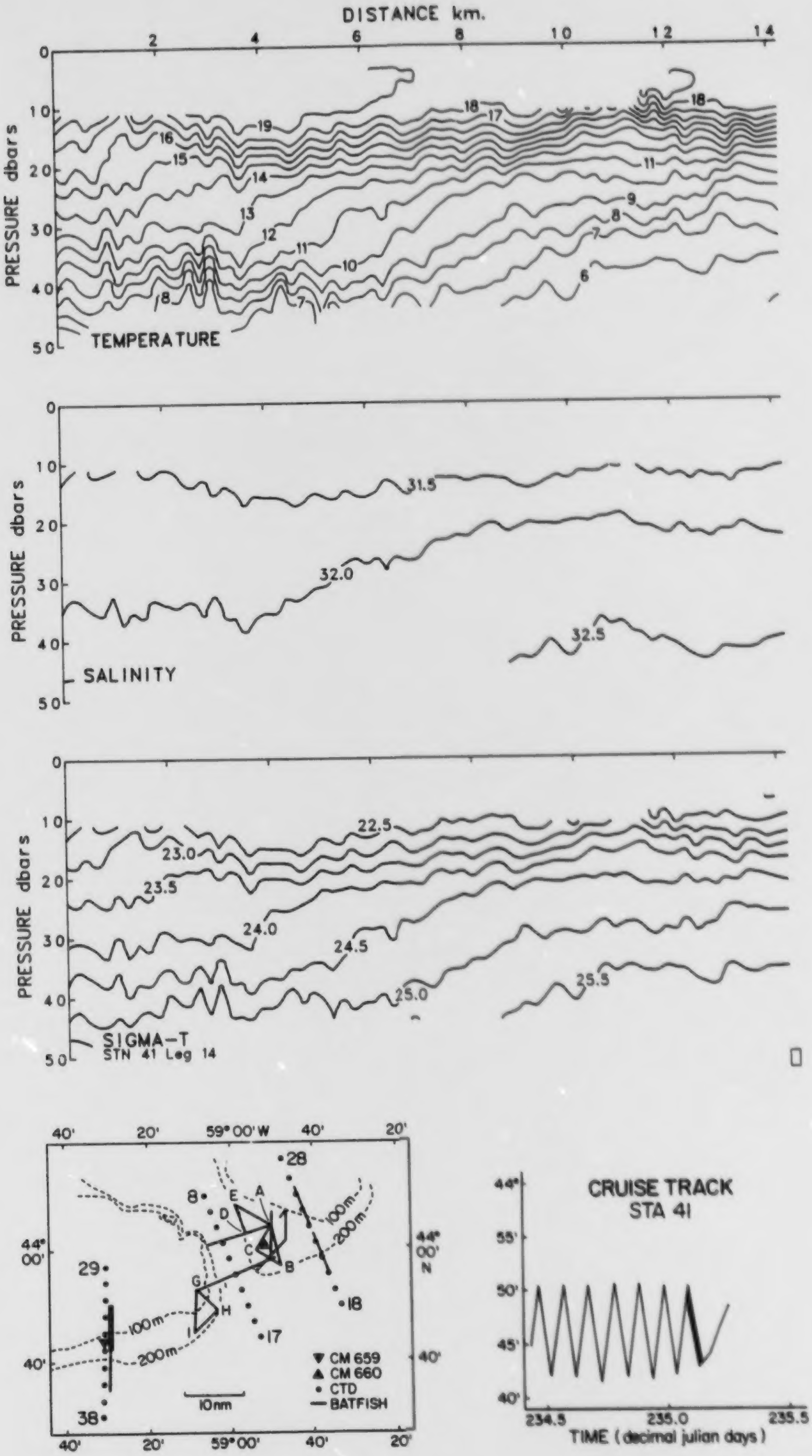

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
31.5
32.0
32.5
PRESSURE dbars
SIGMA-T
STN 41 Leg 14
22.5
23.0
23.5
24.0
24.5
25.0
25.5
59° 00' W
59° 00'
44° 00'
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 41
TIME (decimal julian days)
234.5
235.0
235.5

Fig. 42

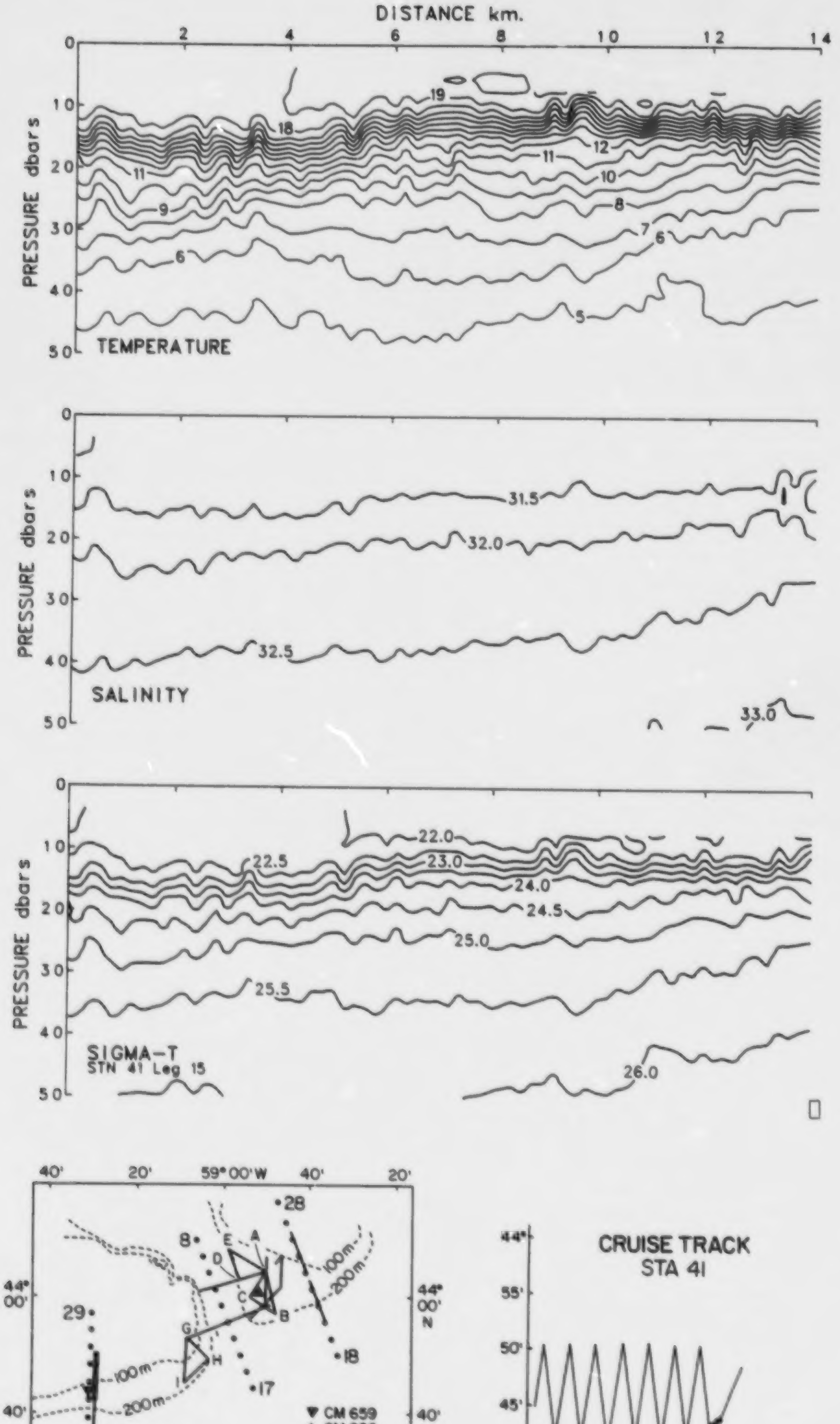

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 41 Leg 15
CM 659
CM 660
CTD
BATFISH
10nm
CRUISE TRACK
STA 41
TIME (decimal julian days)

Fig. 43

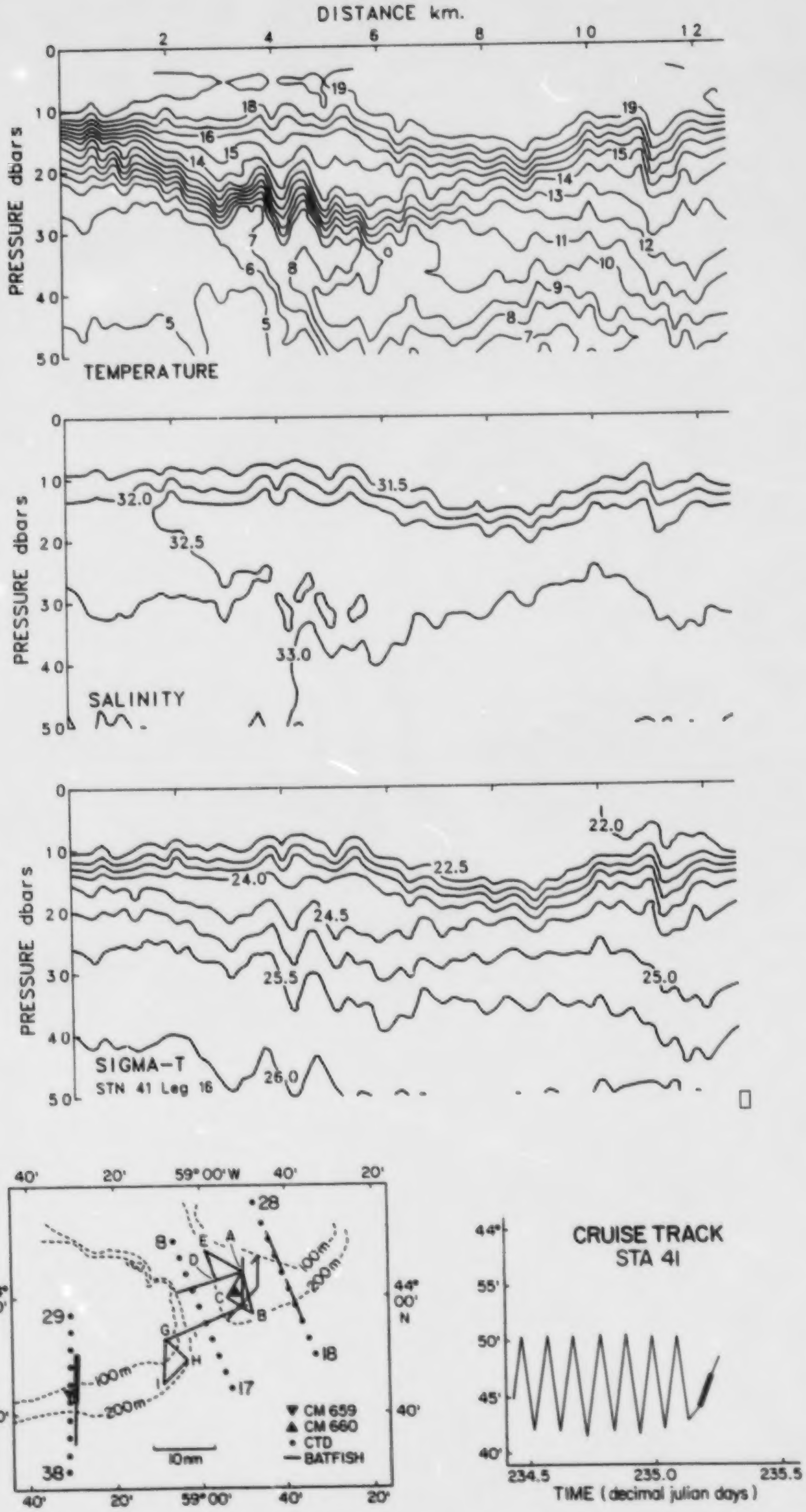

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 41 Leg 16
59° 00' W
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 41
TIME (decimal julian days)

Fig. 44

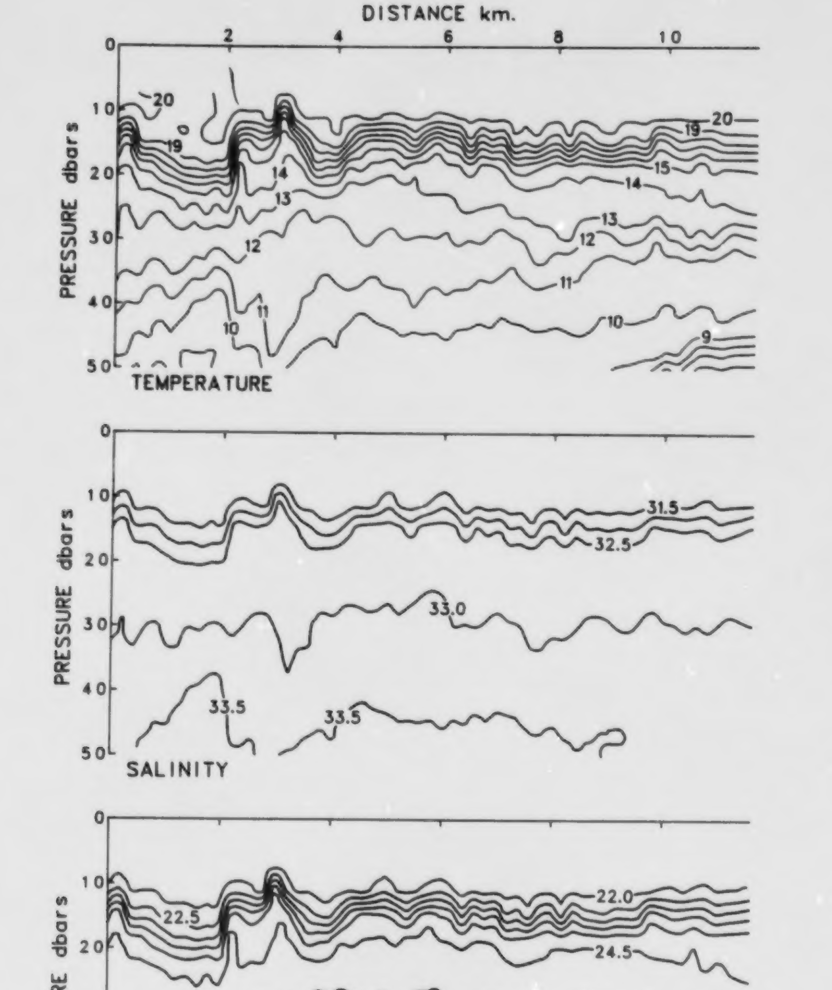

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 41 Leg 17
59°00'W
44° 00'
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 41
TIME (decimal julian days)

Fig. 45

Figures 46-60.

BATFISH station 42: 15 sections of Temperature, Salinity and Sigma-t vs. pressure, location maps and longitude vs. time plot.

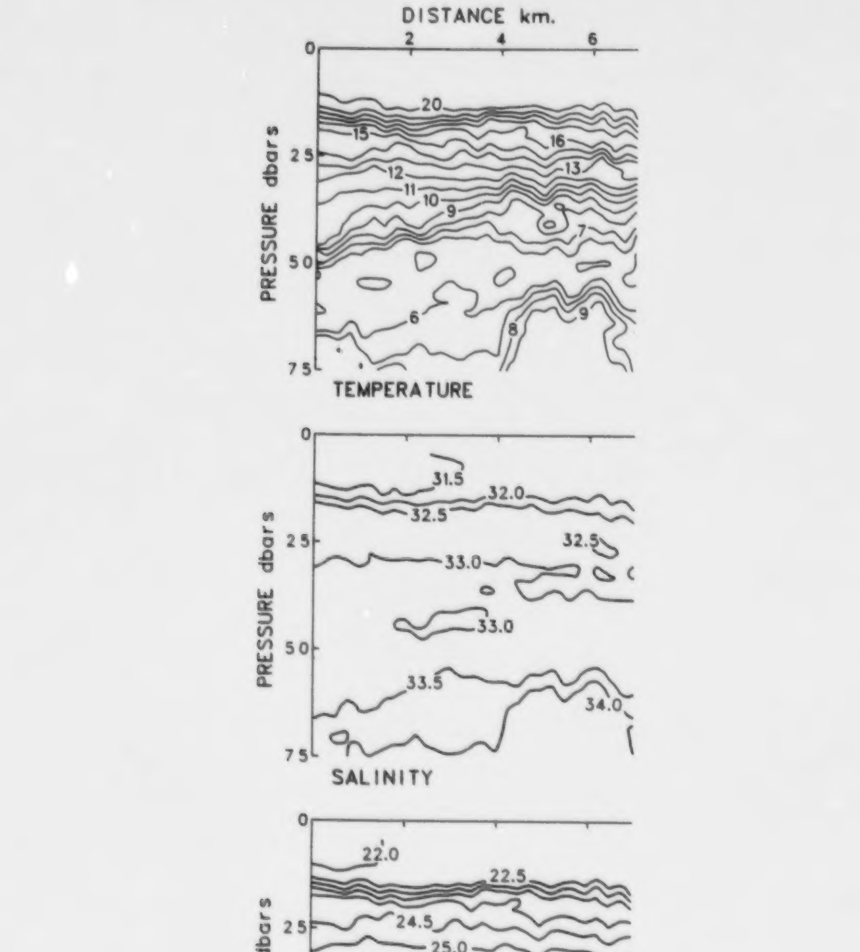

DISTANCE km.
2
4
6
0
25
50
75
PRESSURE dbars
20
15
16
12
13
11
10
9
7
6
8
9
TEMPERATURE
31.5
32.0
32.5
32.5
33.0
33.0
33.5
34.0
SALINITY
22.0
22.5
24.5
25.0
25.5
26.0
26.25
26.50
SIGMA-T
STN 42 Leg 1
40'
20'
59°00'W
40'
20'
44°
00'
N
40'
28
8
29
18
17
38
A
B
C
D
E
G
H
I
100m
200m
CM 659
CM 660
CTD
BATFISH
10nm
59°00'
CRUISE TRACK
STA 42
15'
10'
05'
59°
55'
235.0
235.5
236.0
TIME (decimal julian days)

Fig. 46

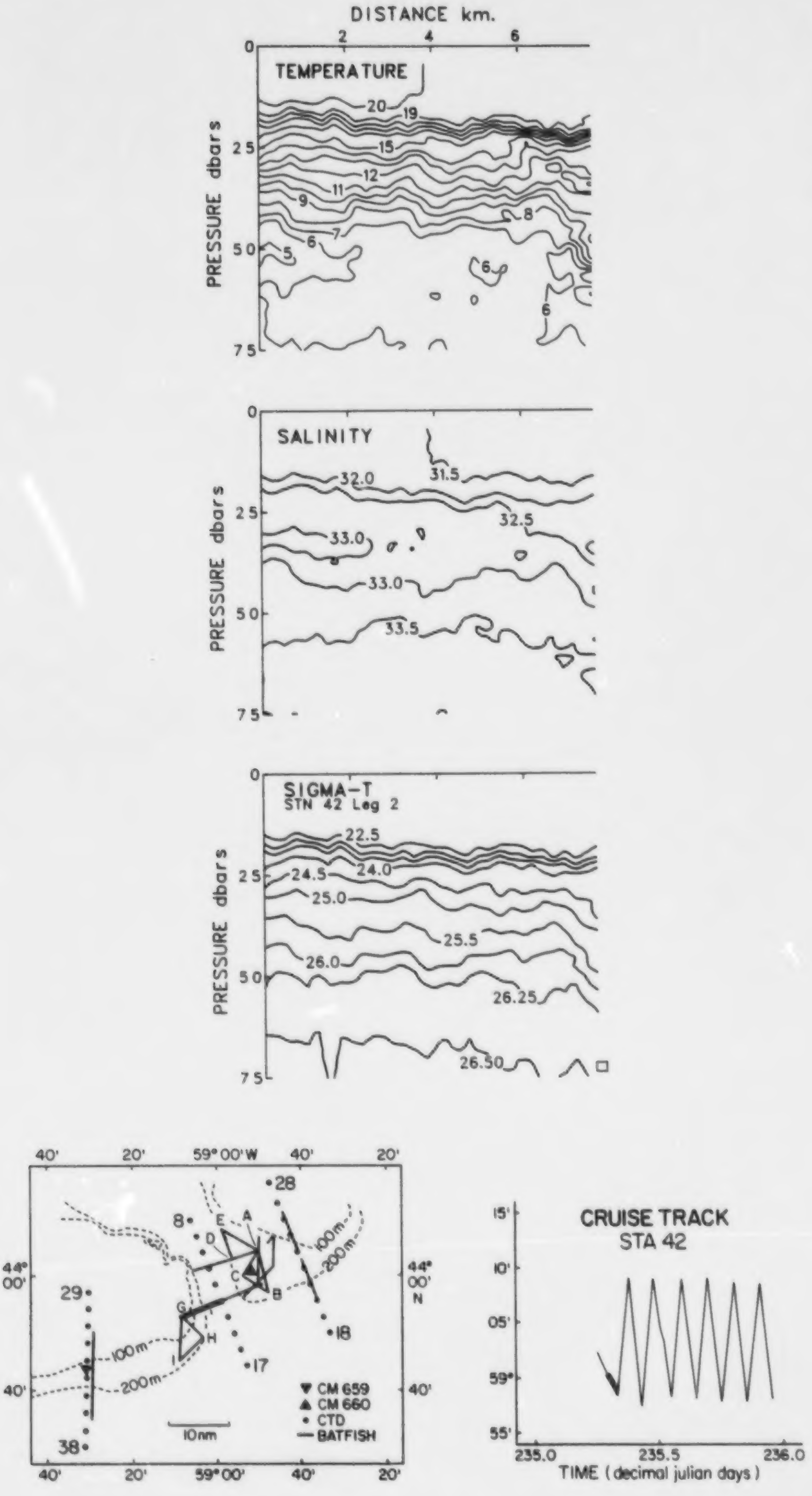
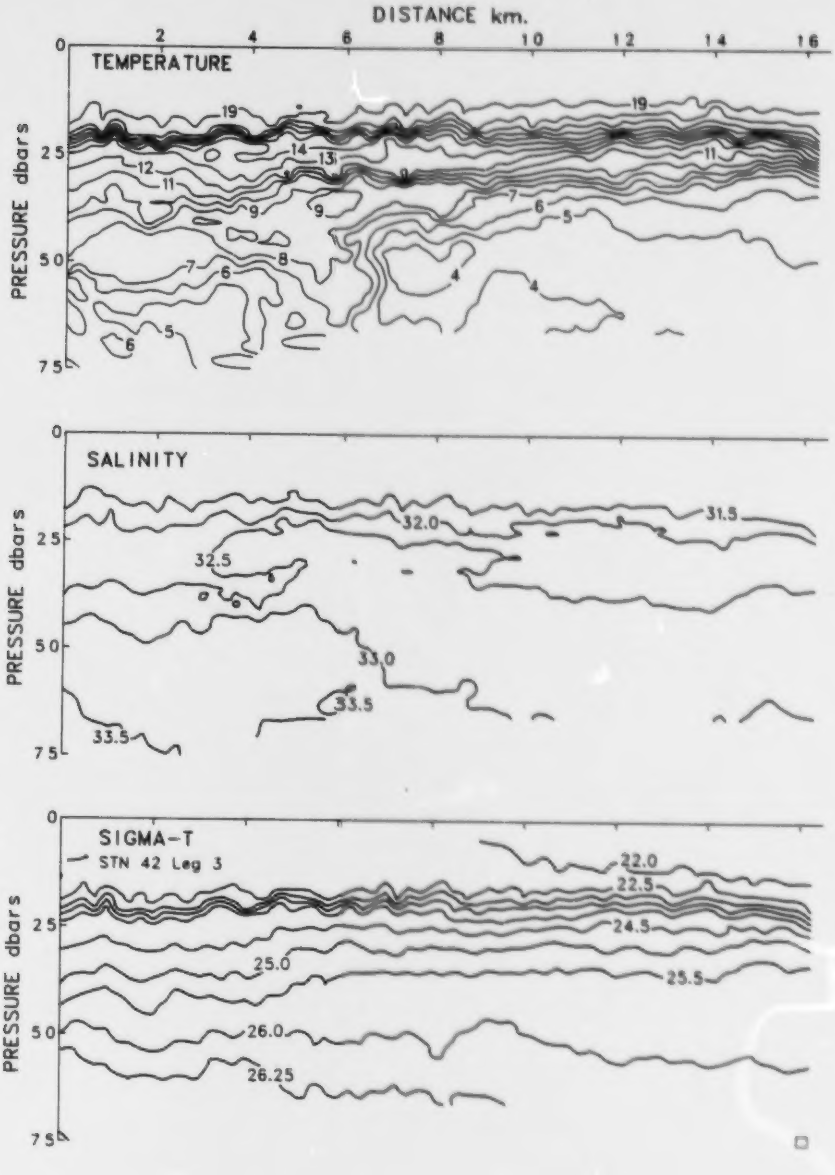
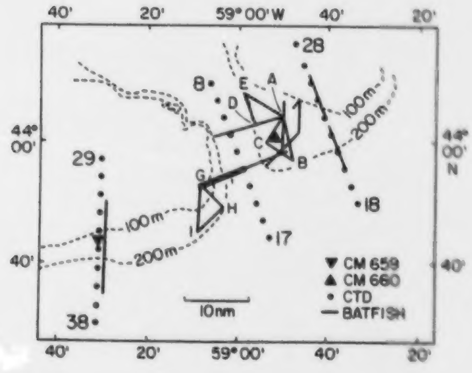

DISTANCE km.
TEMPERATURE
PRESSURE dbars
SALINITY
SIGMA-T
STN 42 Leg 2
CRUISE TRACK
STA 42
TIME (decimal julian days)
CM 659
CM 660
CTD
BATFISH
10nm

Fig. 47


DISTANCE km.
TEMPERATURE
PRESSURE dbars
SALINITY
SIGMA-T
STN 42 Leg 3


59° 00'W
44° 00'
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm

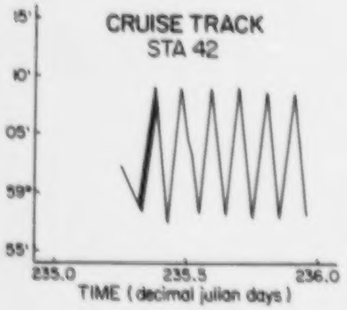

CRUISE TRACK
STA 42
TIME (decimal julian days)

Fig. 48

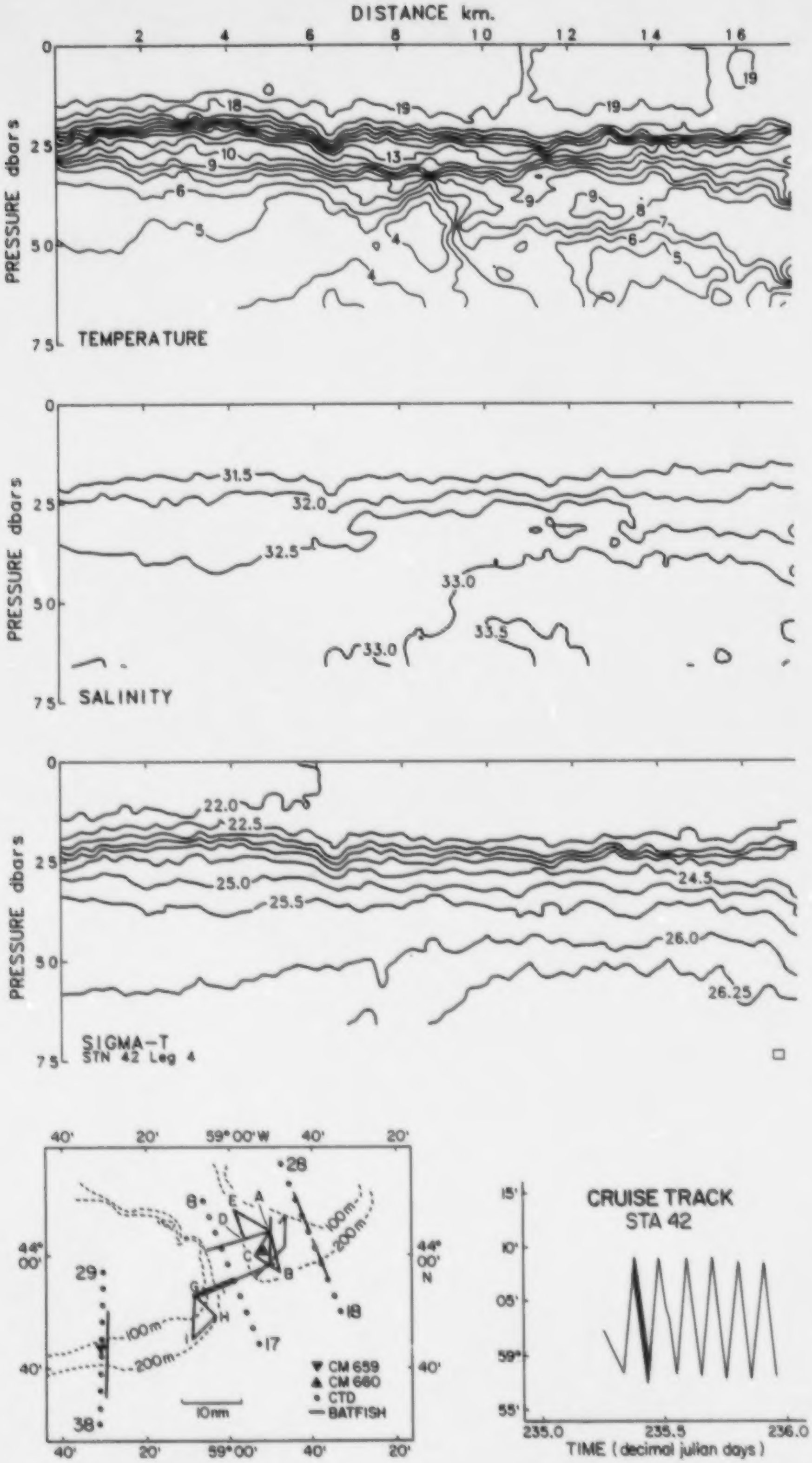
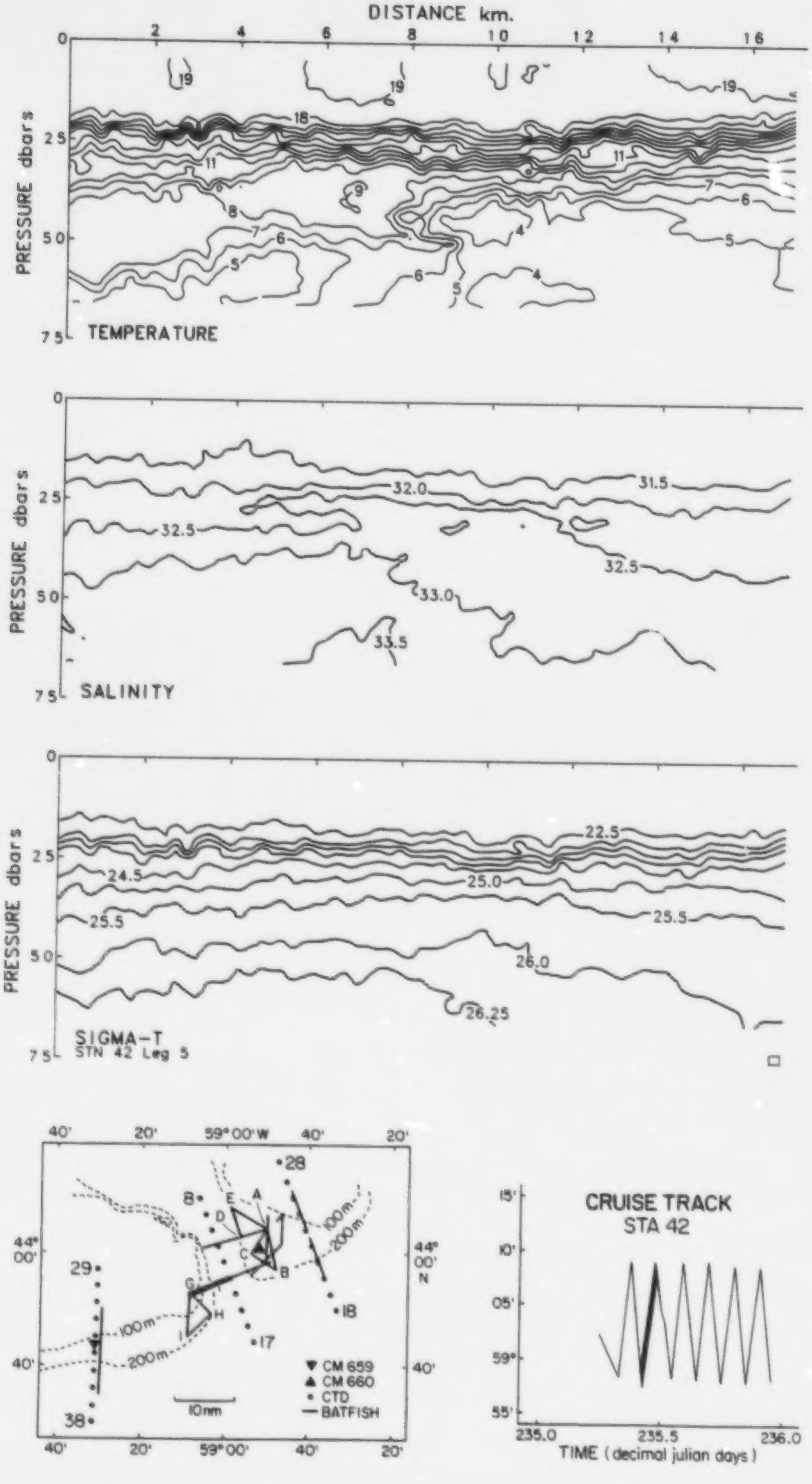

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 42 Leg 4
CM 659
CM 660
CTD
BATFISH
10nm
59° 00' W
44° 00' N
CRUISE TRACK
STA 42
TIME (decimal julian days)

Fig. 49



DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 42 Leg 5
▼ CM 659
▲ CM 660
• CTD
— BATFISH
10nm
59°00'W
44° 00' N
100m
200m
CRUISE TRACK
STA 42
TIME (decimal julian days)

Fig. 50

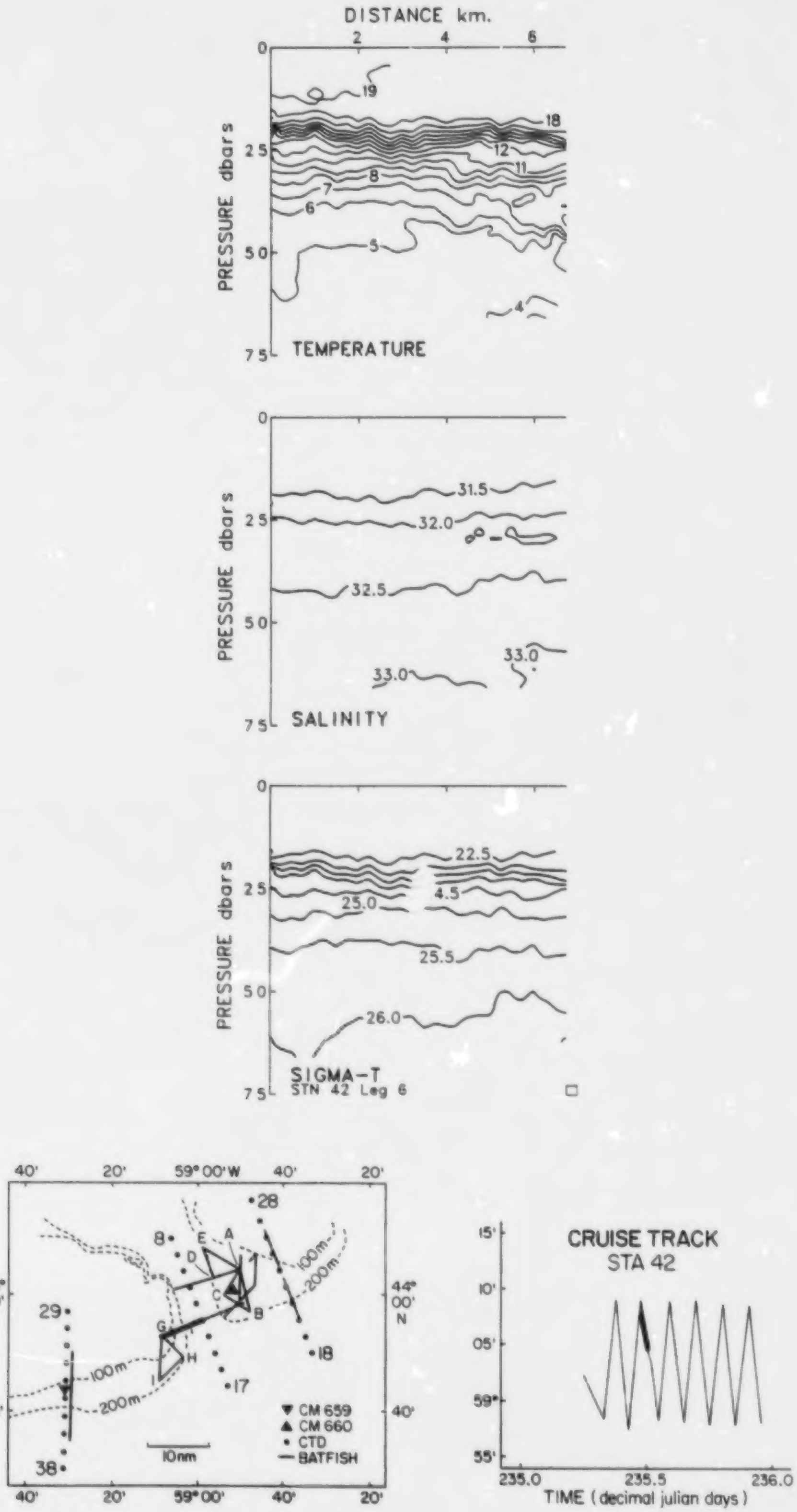
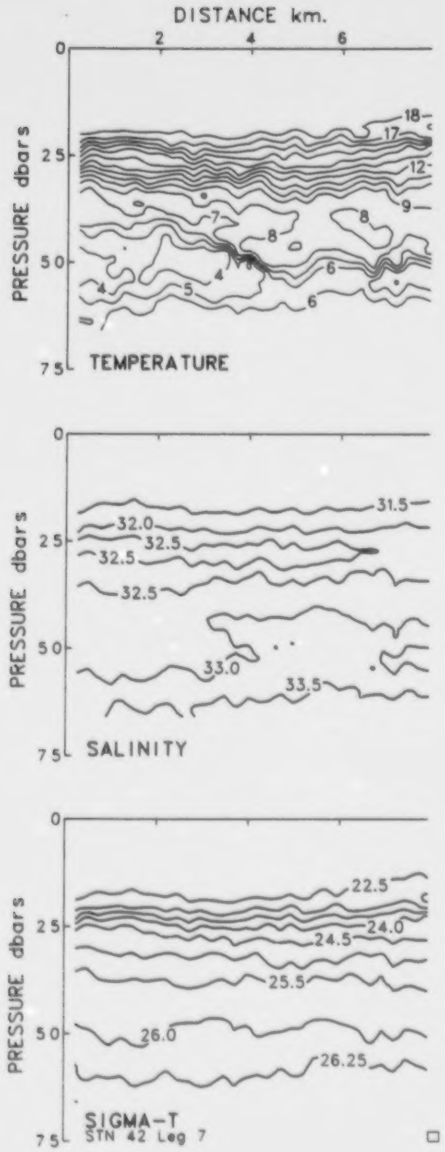

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 42 Leg 6
59° 00' W
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 42
TIME (decimal julian days)

Fig. 51


DISTANCE km.
2
4
6
PRESSURE dbars
0
25
50
75
18
17
12
9
8
7
6
5
4
TEMPERATURE
31.5
32.0
32.5
33.0
33.5
SALINITY
22.5
24.0
24.5
25.5
26.0
26.25
SIGMA-T
STN 42 Leg 7

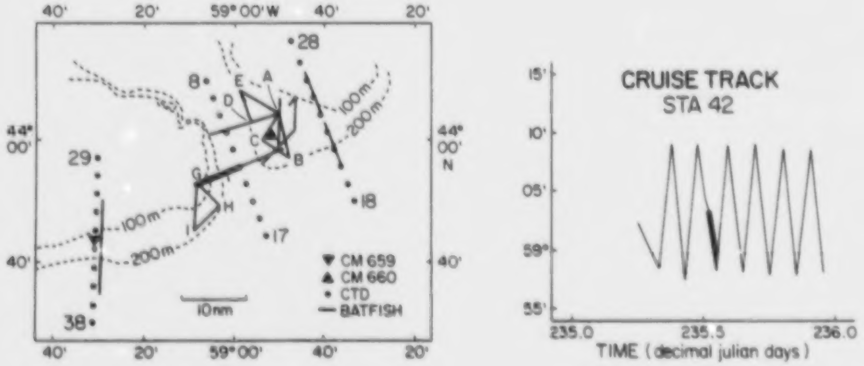

40'
20'
59° 00' W
28
8
E
A
D
C
B
G
H
I
29
18
17
38
100m
200m
44° 00'
44° 00' N
40'
CM 659
CM 660
CTD
BATFISH
10nm
CRUISE TRACK
STA 42
15'
10'
05'
59°
55'
235.0
235.5
236.0
TIME (decimal julian days)

Fig. 52

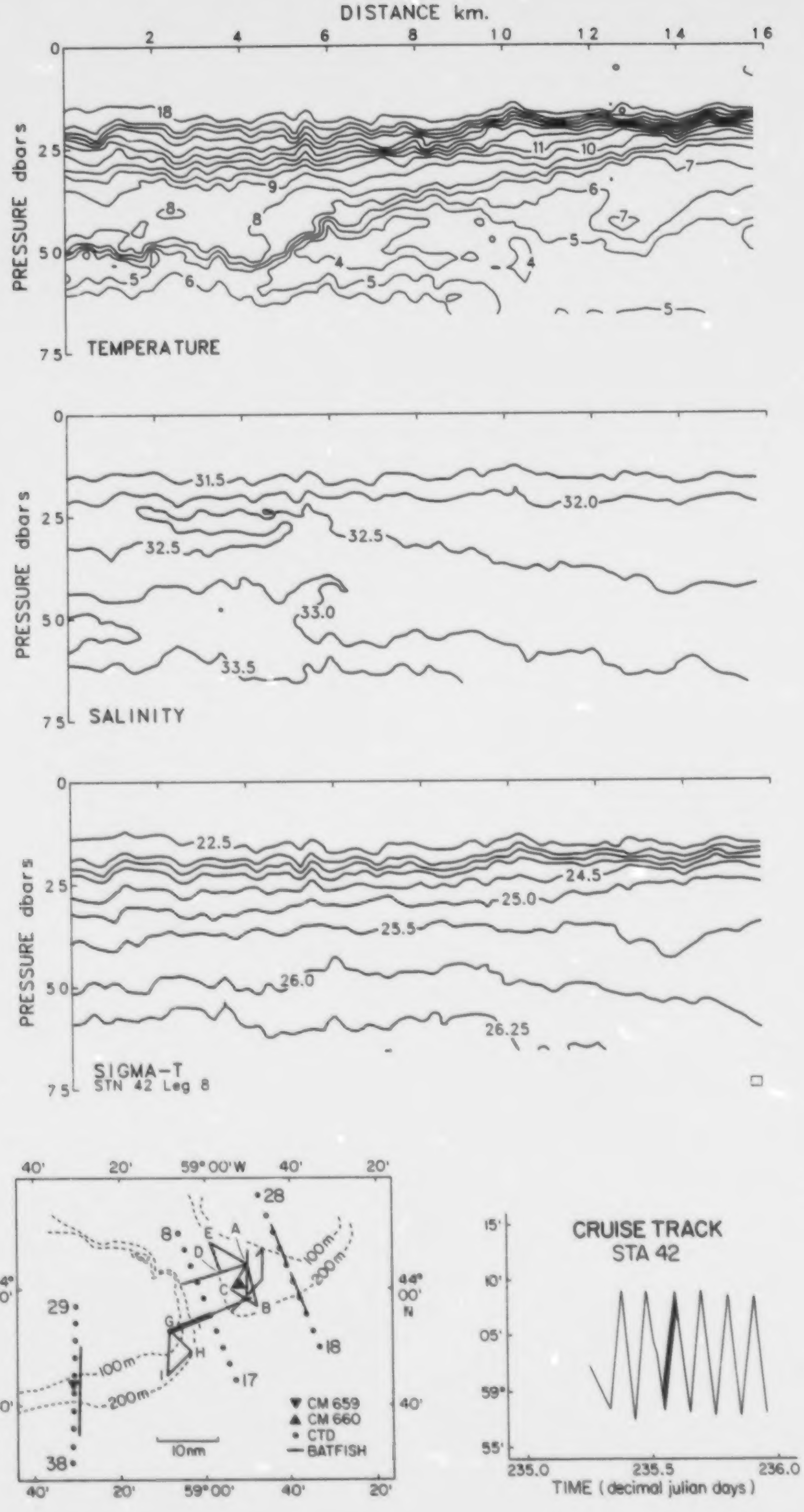

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 42 Leg 8
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
59° 00'W
44° 00' N
CRUISE TRACK
STA 42
TIME (decimal julian days)

Fig. 53

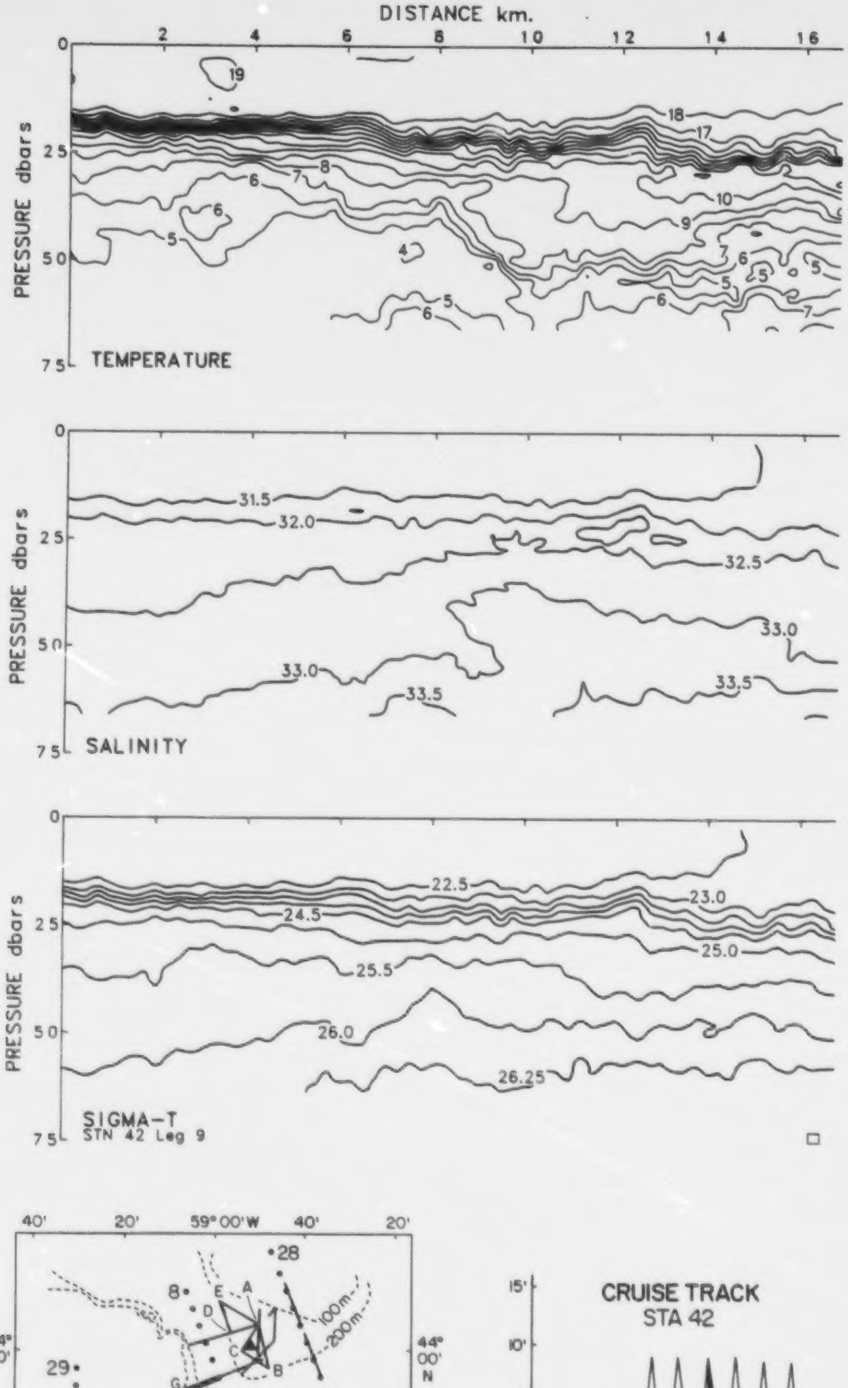

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 42 Leg 9
59° 00' W
44° 00' N
100m
200m
CM 659
CM 660
CTD
BATFISH
10nm
CRUISE TRACK
STA 42
TIME (decimal julian days)

Fig. 54

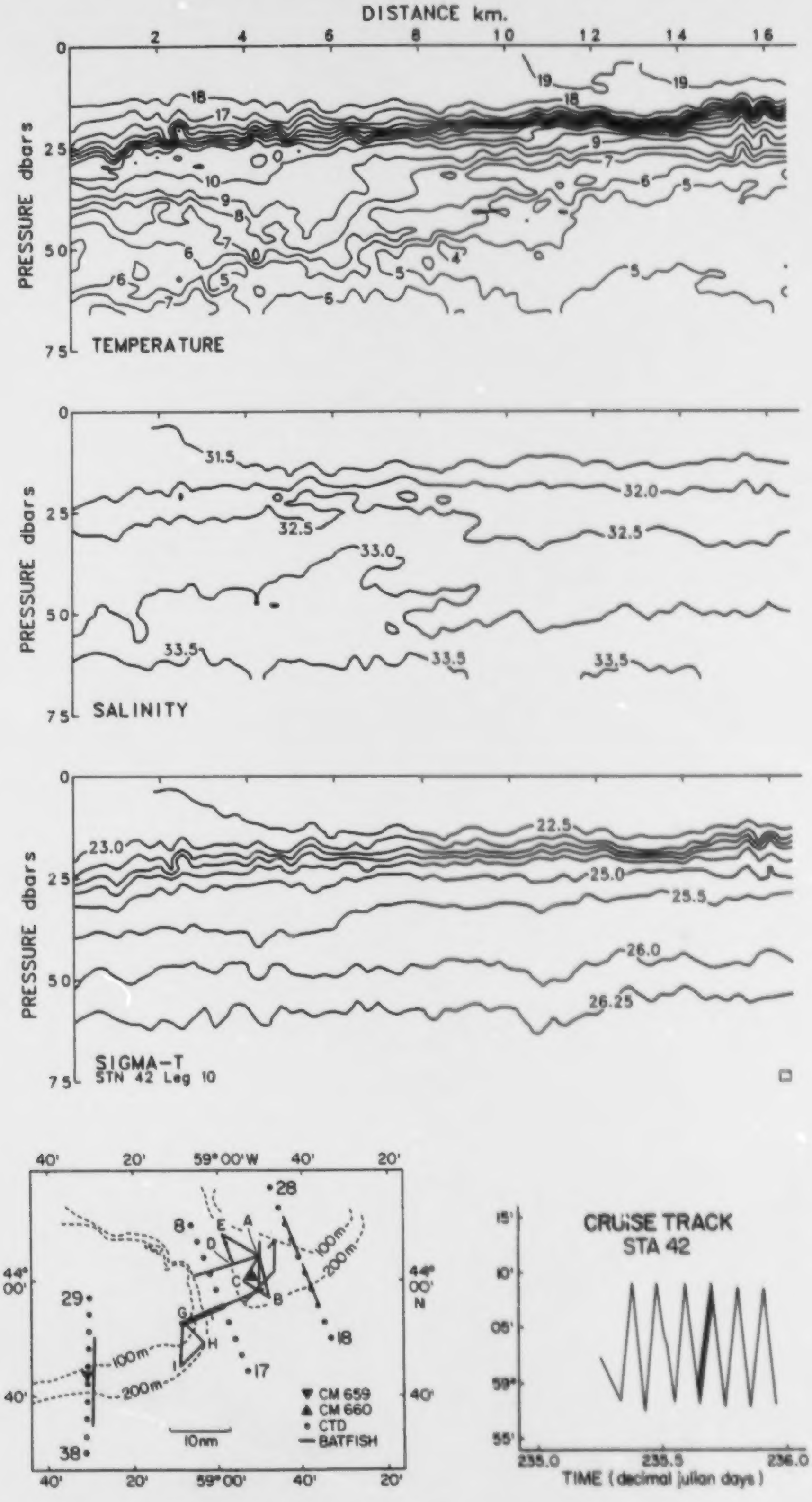

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 42 Leg 10
59° 00' W
44° 00' N
100m
200m
10nm
CM 659
CM 660
CTD
BATFISH
CRUISE TRACK
STA 42
TIME (decimal julian days)

Fig. 55

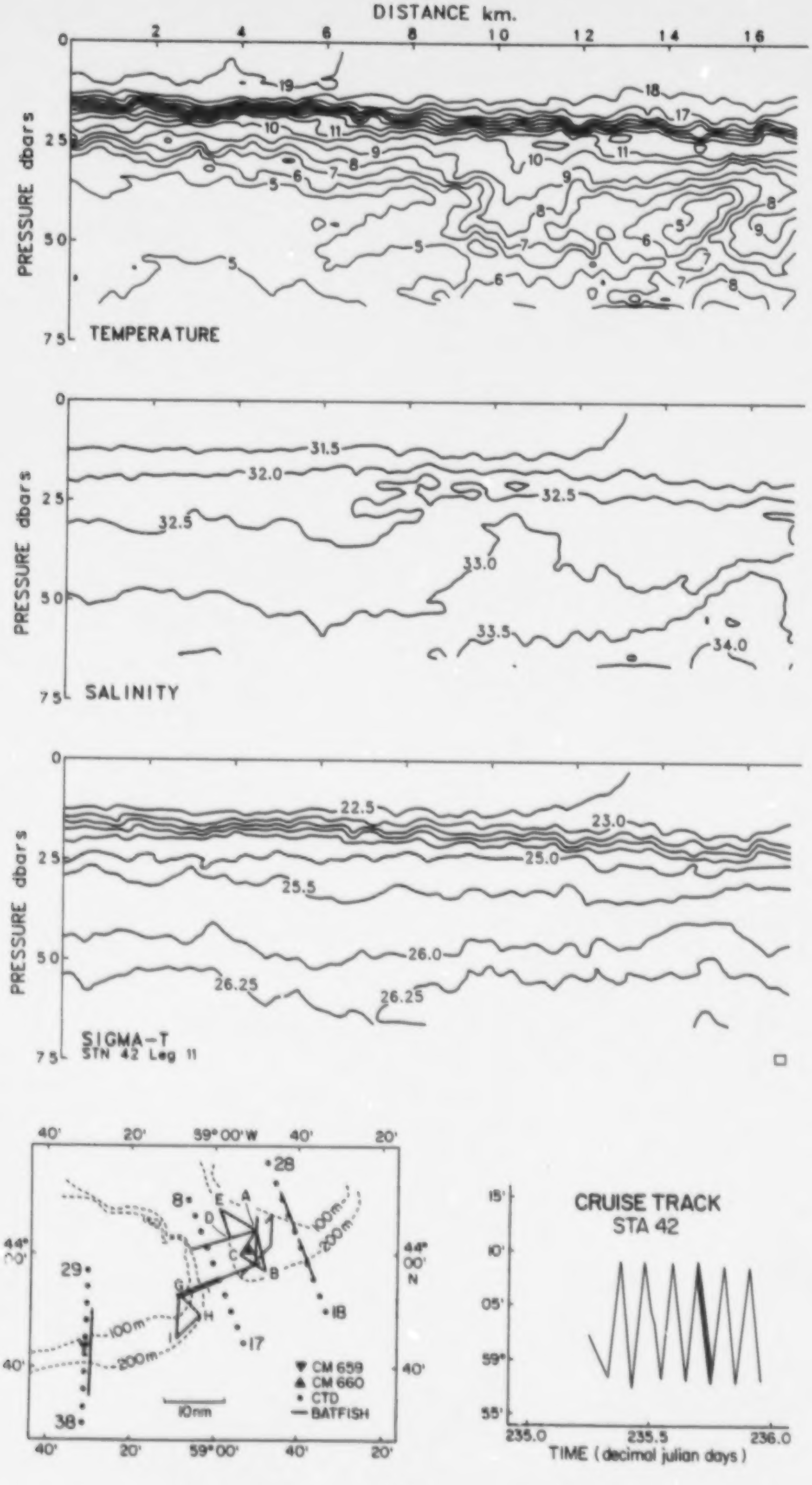

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 42 Leg 11
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
59° 00' W
44° 00' N
CRUISE TRACK
STA 42
TIME (decimal julian days)

Fig. 56

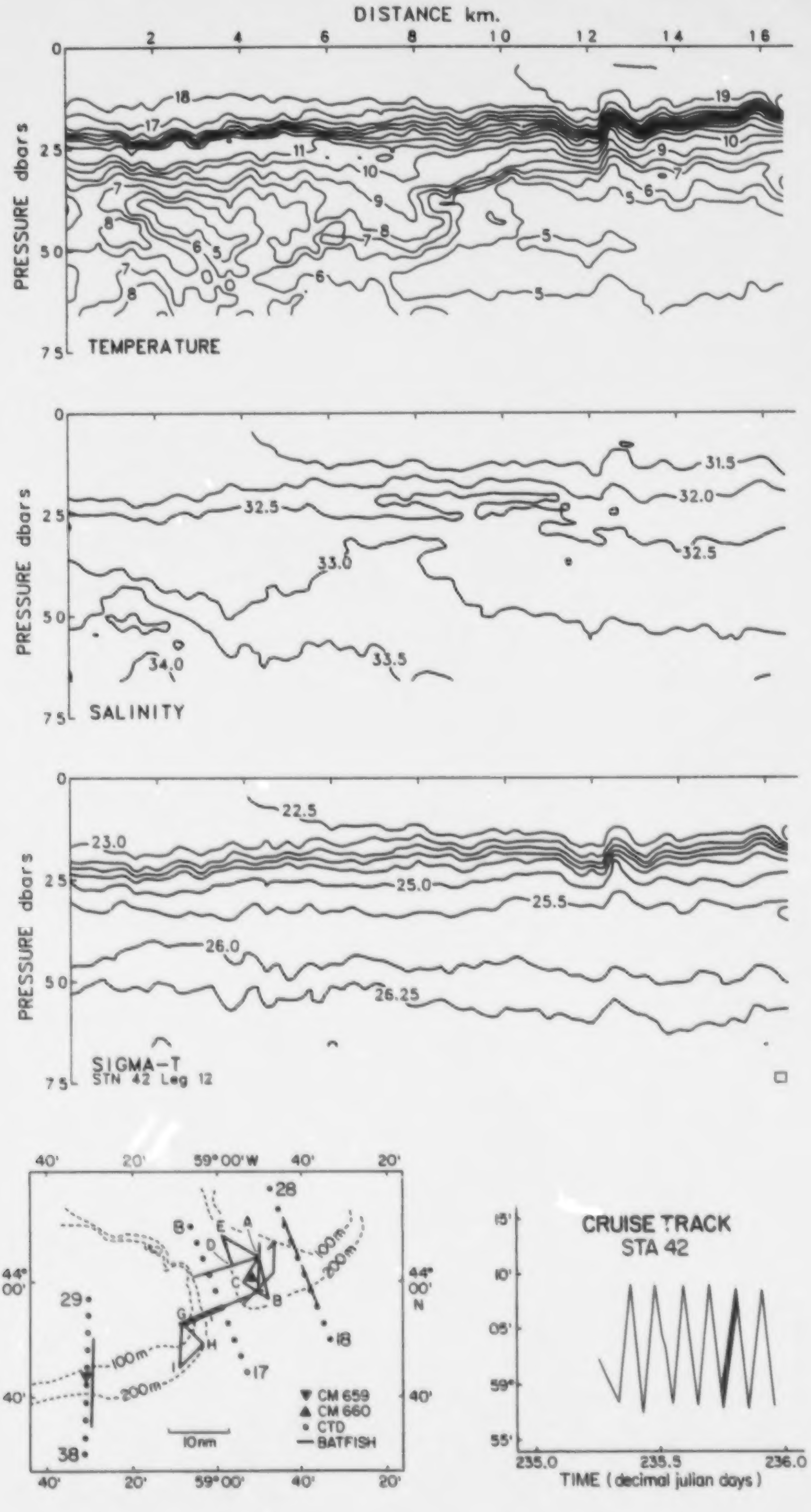

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 42 Leg 12
CRUISE TRACK
STA 42
TIME (decimal julian days)
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
59°00'W
44° 00' N

Fig. 57

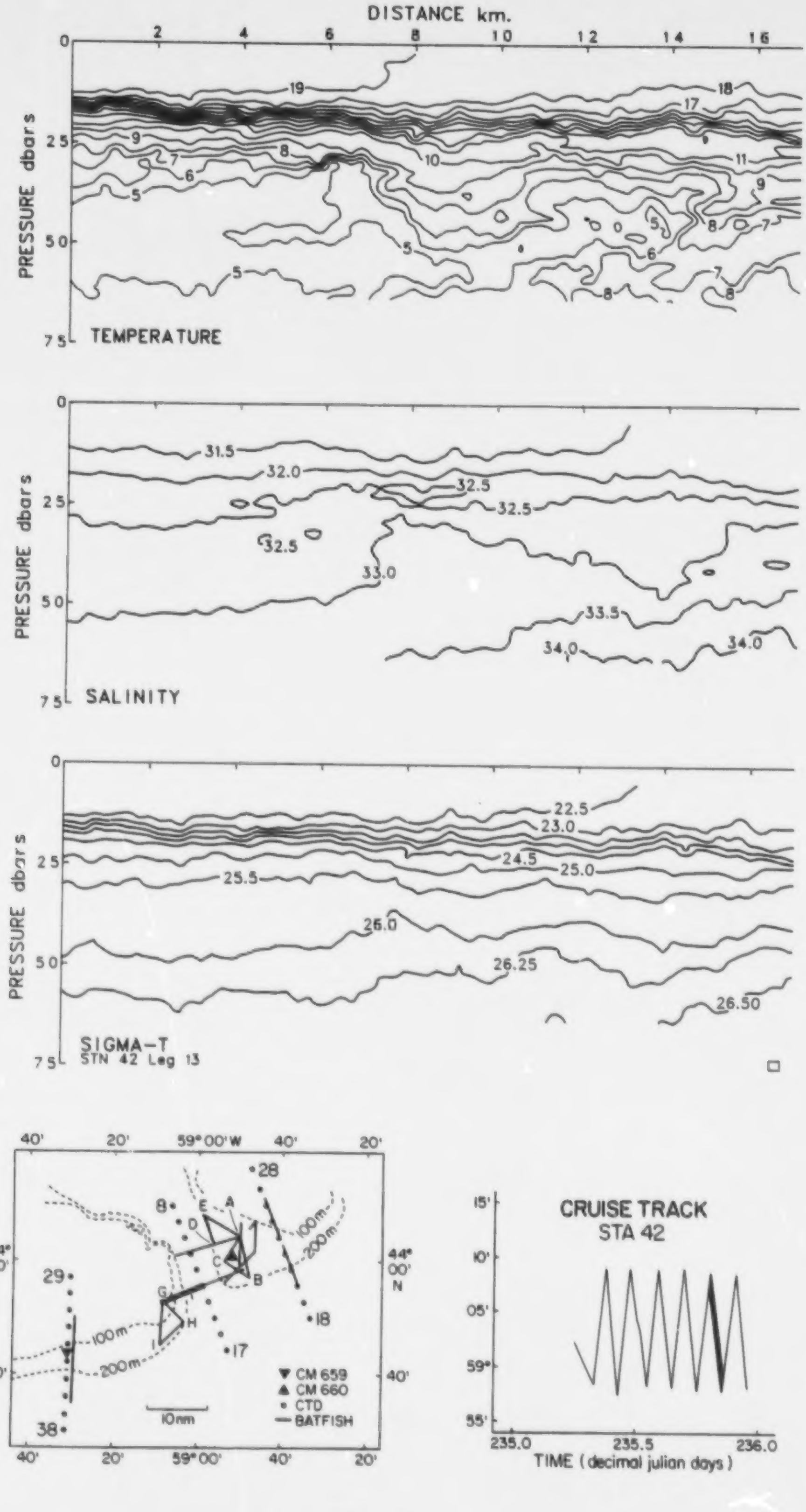

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 42 Leg 13
59°00'W
44° 00'
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 42
TIME (decimal julian days)

Fig. 58

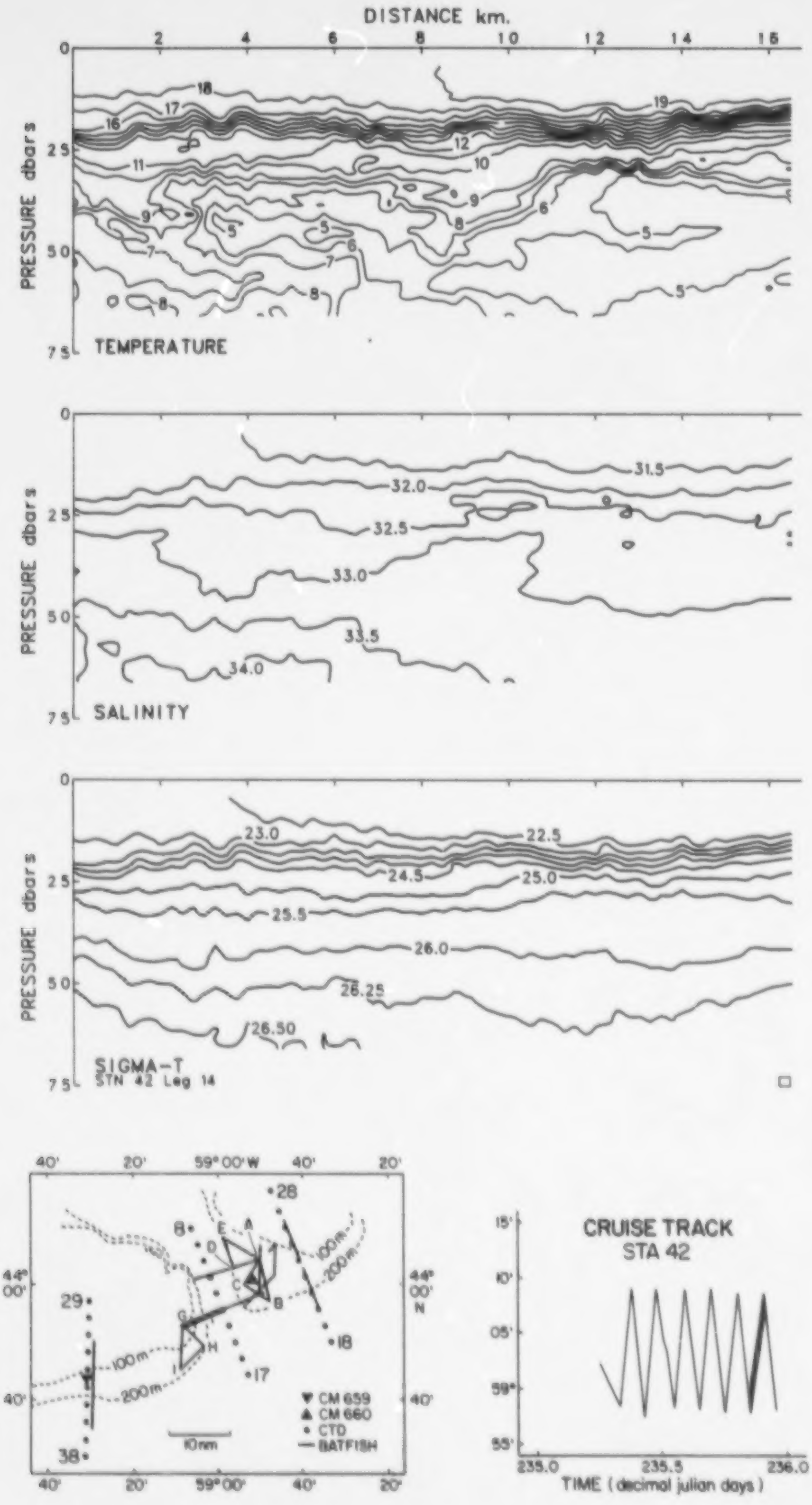

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 42 Leg 14
CRUISE TRACK
STA 42
TIME (decimal julian days)
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m

Fig. 59

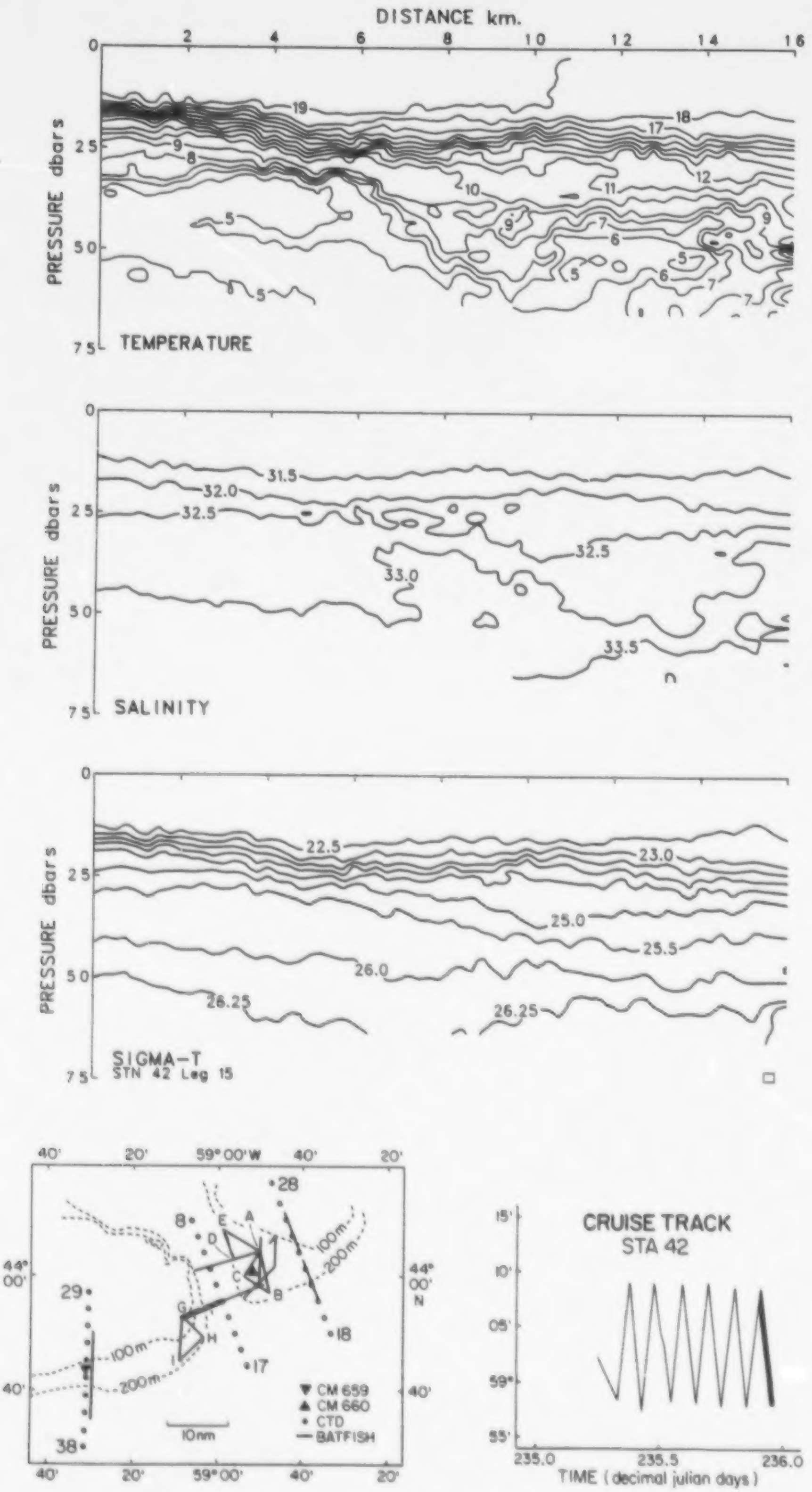
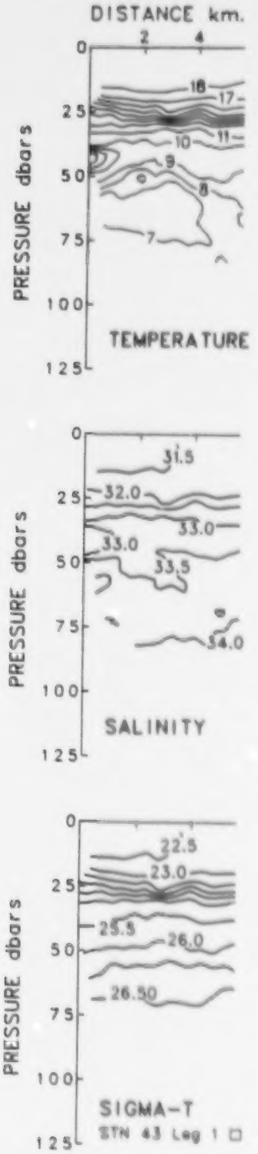
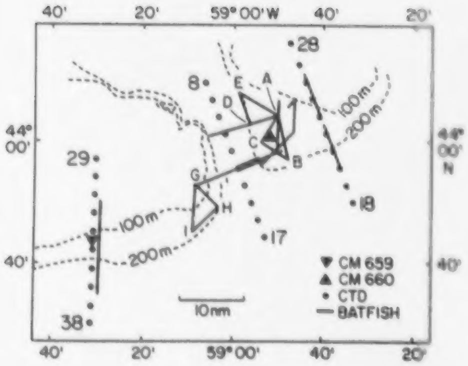

DISTANCE km.
2 4 6 8 10 12 14 16
PRESSURE dbars
0 25 50 75
TEMPERATURE
19 18 17 12 11 10 9 8 7 6 5
SALINITY
31.5 32.0 32.5 33.0 33.5
SIGMA-T
STN 42 Leg 15
22.5 23.0 25.0 25.5 26.0 26.25
40' 20' 59°00'W 40' 20'
44° 00' N
40'
28 8 29 38 17 18
A B C D E G H I
100m 200m
10nm
CM 659
CM 660
CTD
BATFISH
CRUISE TRACK
STA 42
15' 10' 05' 59° 55'
235.0 235.5 236.0
TIME (decimal julian days)

Fig. 60

Figures 61-64.

BATFISH station 43: 4 sections of Temperature, Salinity and Sigma-t vs. pressure, location maps and longitude vs. time plot.


DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 43 Leg 1


CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
59°00'W

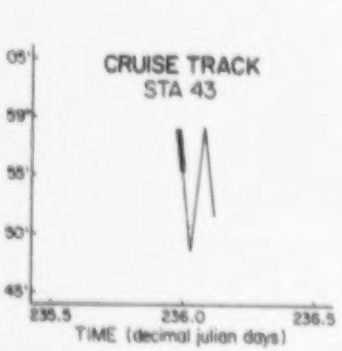

CRUISE TRACK
STA 43
TIME (decimal julian days)

Fig. 61

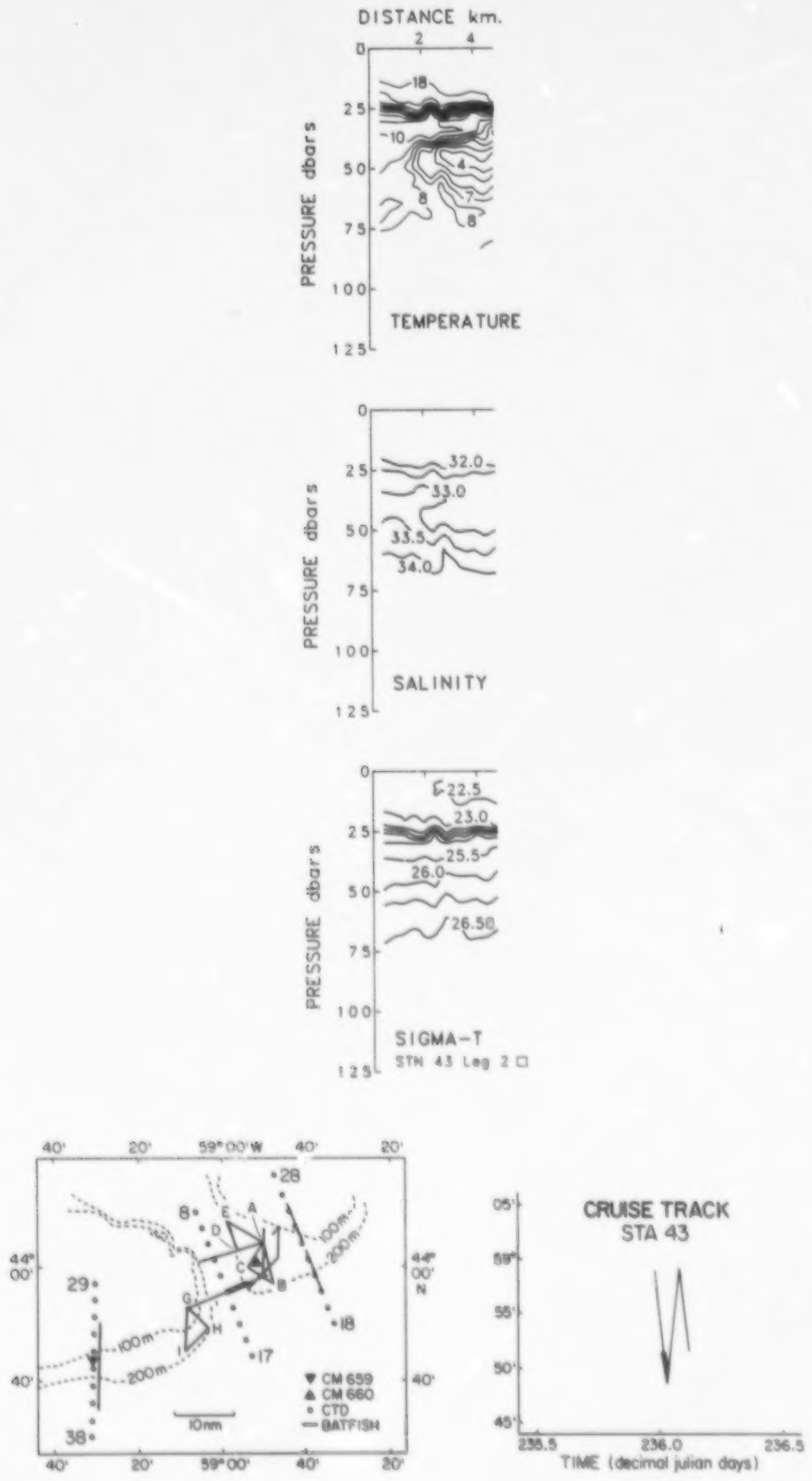

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 43 Leg 2
CRUISE TRACK
STA 43
TIME (decimal julian days)
CM 659
CM 660
CTD
BATFISH
10nm

Fig. 62

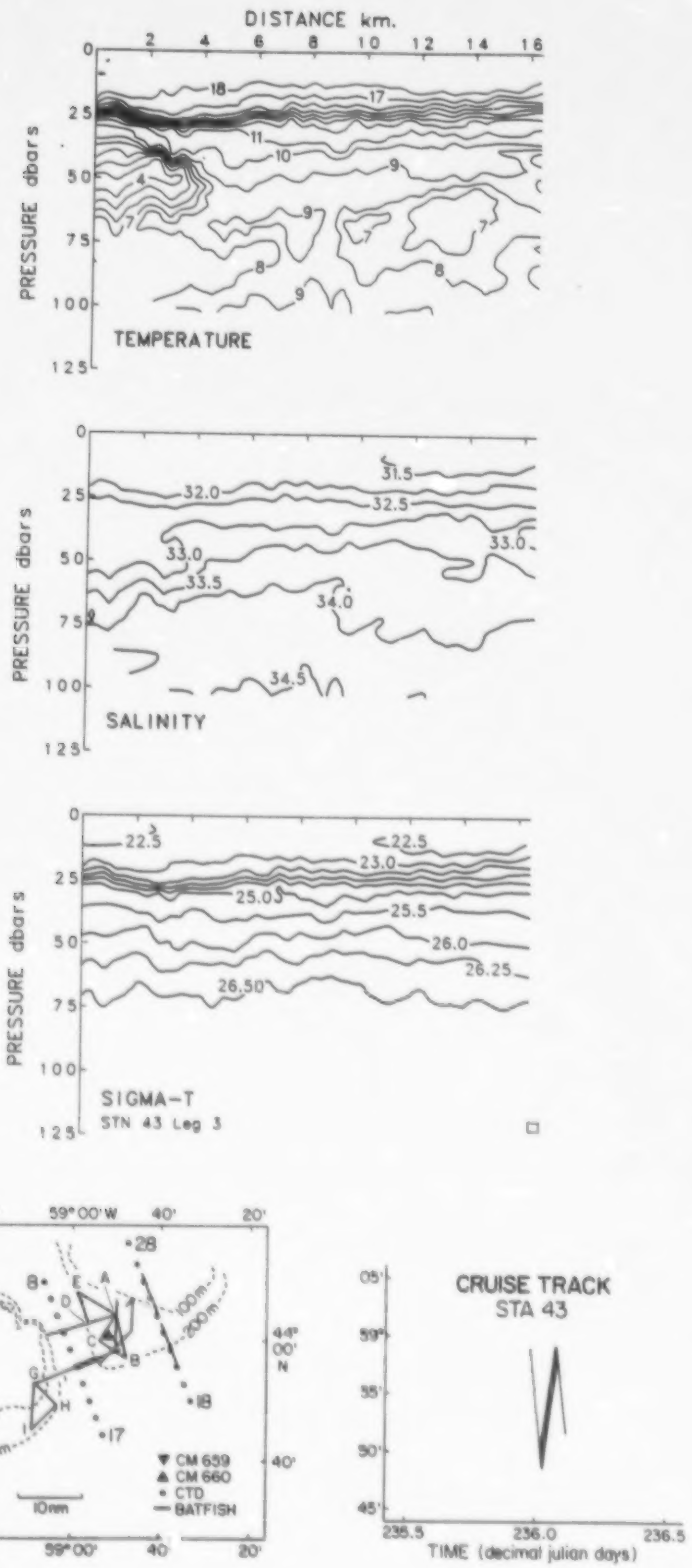

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 43 Leg 3
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 43
TIME (decimal julian days)

Fig. 63

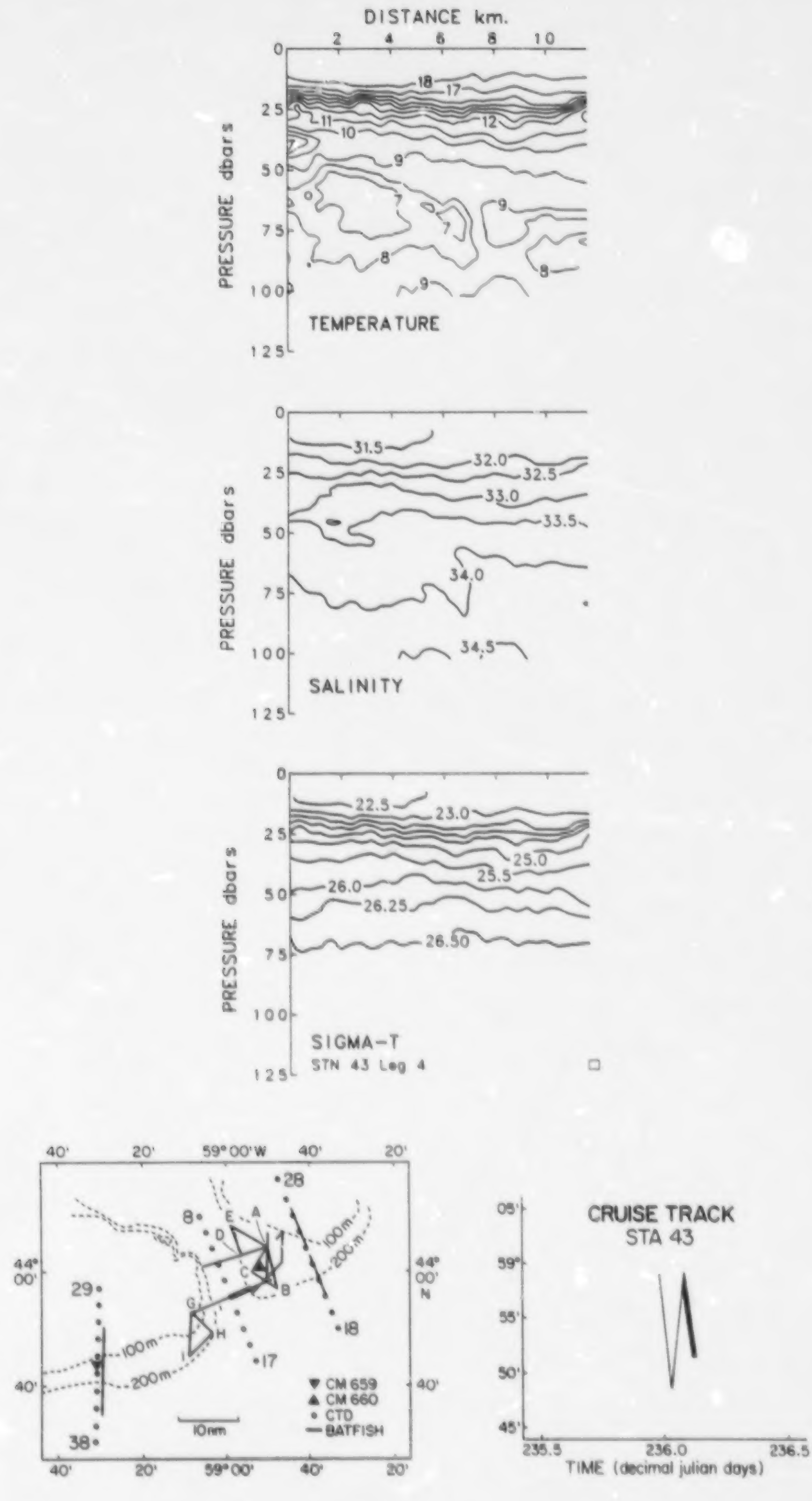

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 43 Leg 4
CM 659
CM 660
CTD
BATFISH
10nm
CRUISE TRACK
STA 43
TIME (decimal julian days)

Fig. 64

Figures 65-77.

BATFISH station 44: 13 sections of Temperature, Salinity and Sigma-t vs. pressure, location maps and longitude vs. time plot.

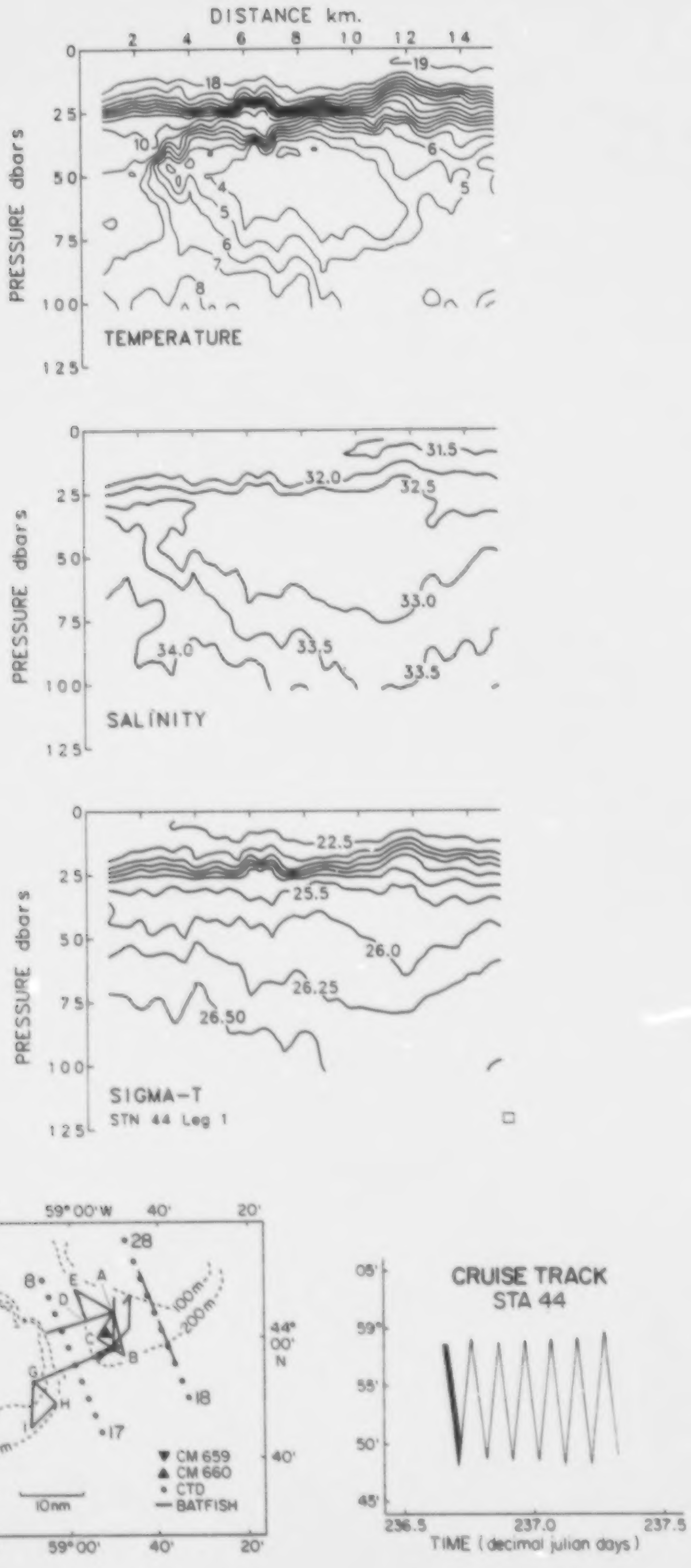
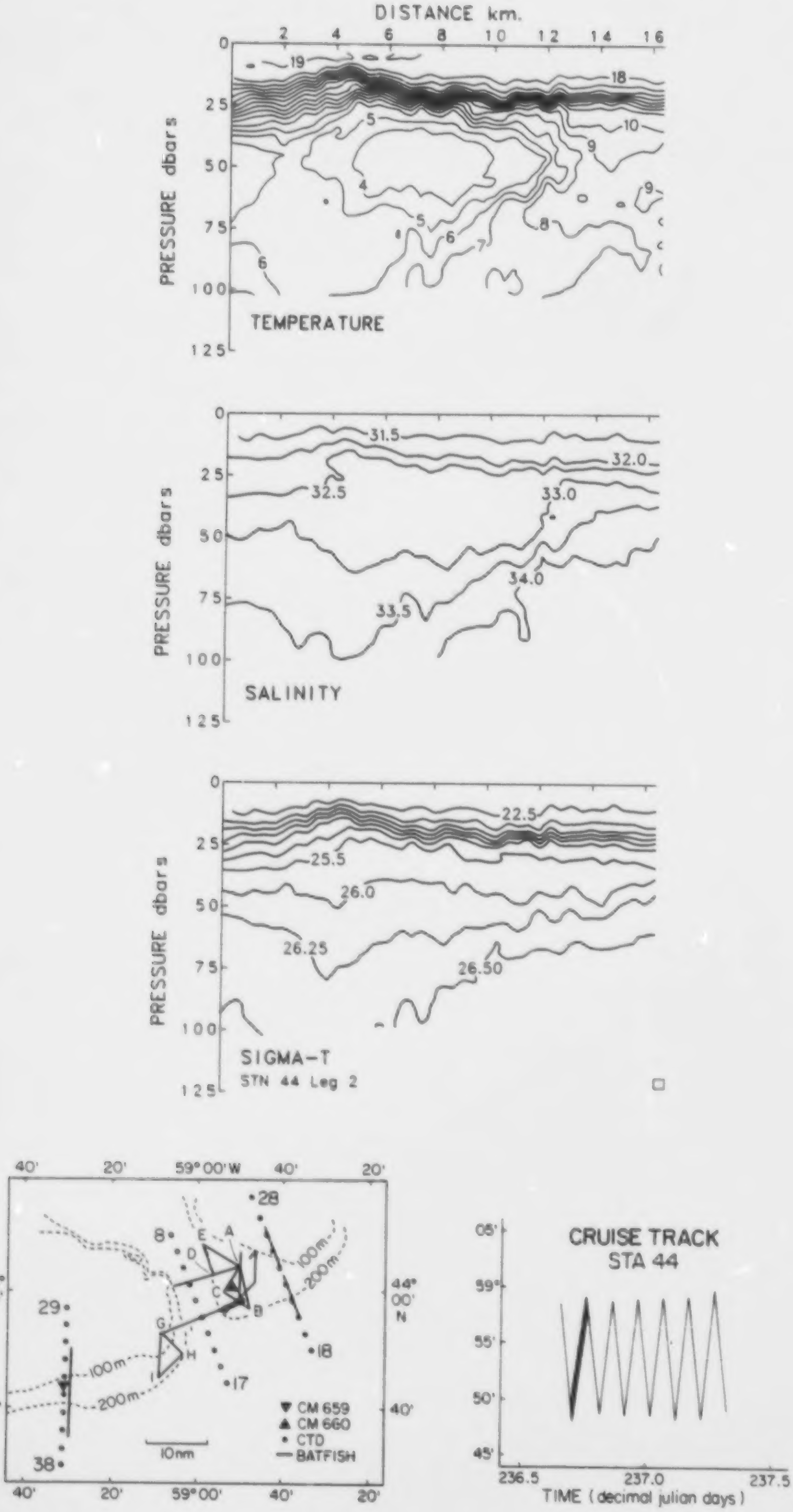

DISTANCE km.
2 4 6 8 10 12 14
0 25 50 75 100 125
PRESSURE dbars
19
18
10
6
5
4
5
6
7
8
TEMPERATURE
31.5
32.0
32.5
33.0
34.0
33.5
33.5
SALINITY
22.5
25.5
26.0
26.25
26.50
SIGMA-T
STN 44 Leg 1
40' 20' 59° 00' W 40' 20'
44° 00'
44° 00' N
40'
28
8
E
A
D
C
B
29
G
H
18
17
100m
200m
38
CM 659
CM 660
CTD
BATFISH
10nm
40' 20' 59° 00' 40' 20'
CRUISE TRACK
STA 44
05'
59'
55'
50'
45'
236.5
237.0
237.5
TIME (decimal julian days)

Fig. 65



DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 44 Leg 2
59°00'W
44° 00' N
100m
200m
10nm
CM 659
CM 660
CTD
BATFISH
CRUISE TRACK
STA 44
TIME (decimal julian days)

Fig. 66

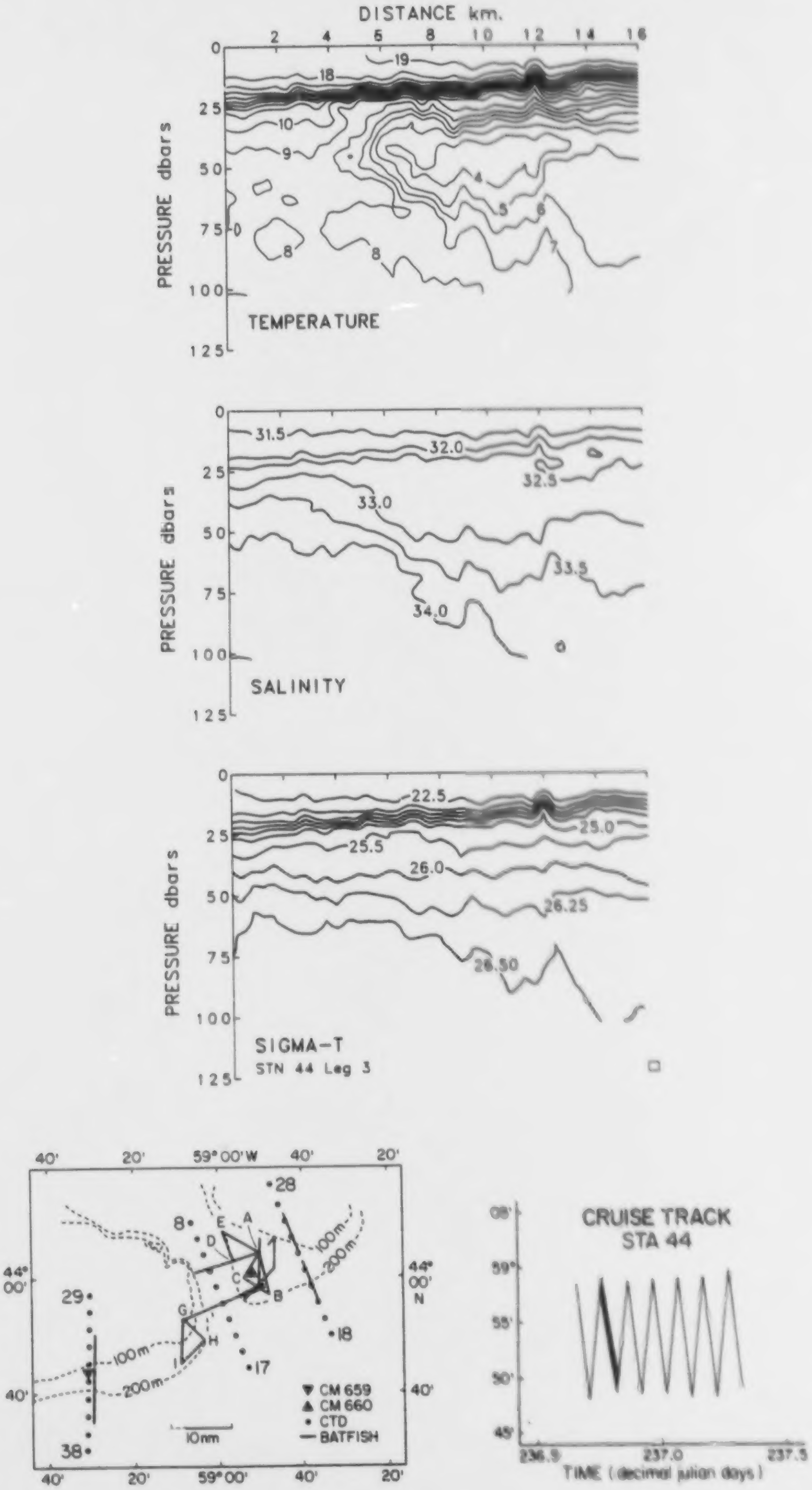

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 44 Leg 3
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
59° 00' W
44° 00' N
CRUISE TRACK
STA 44
TIME (decimal julian days)

Fig. 67

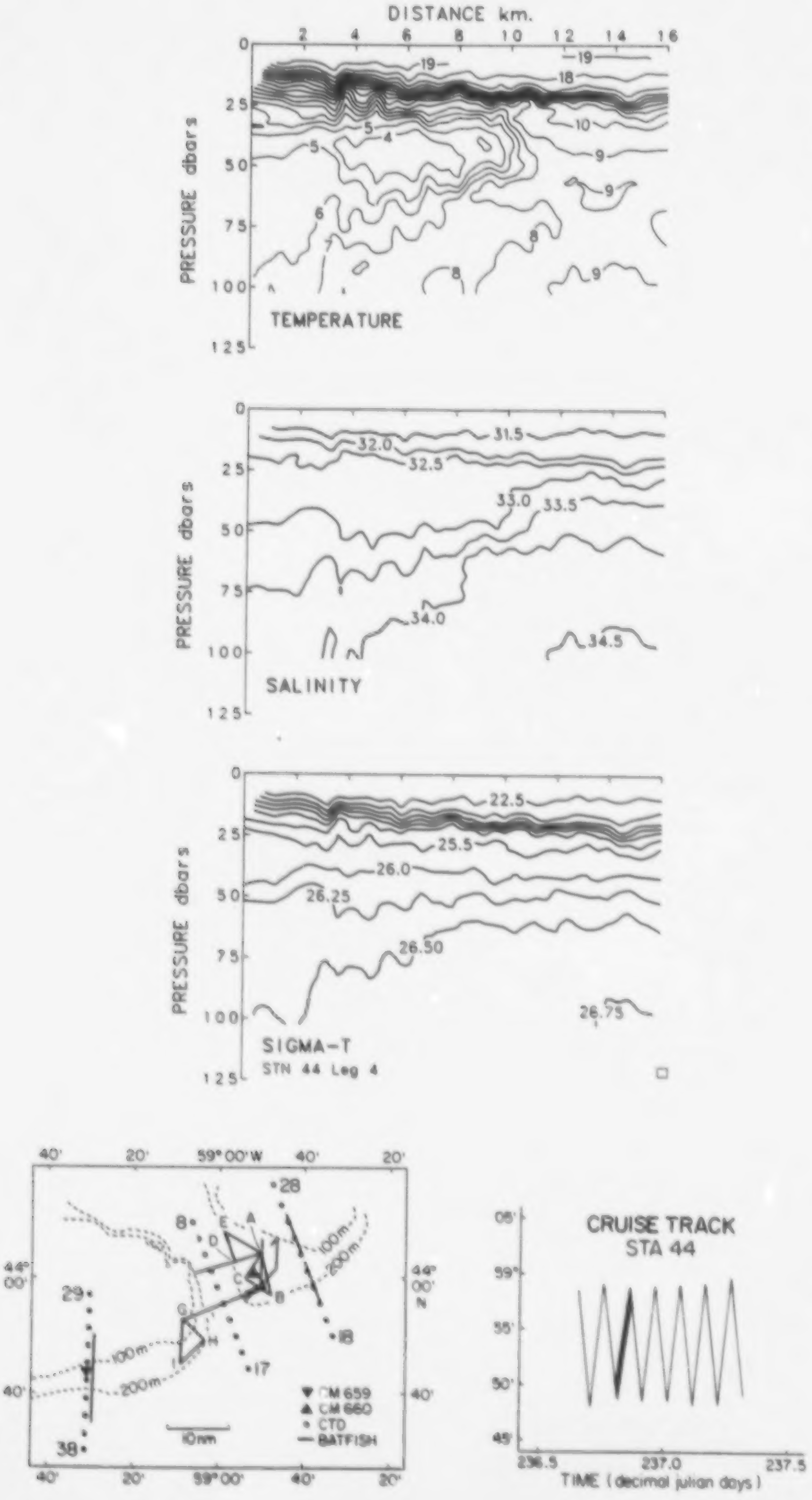
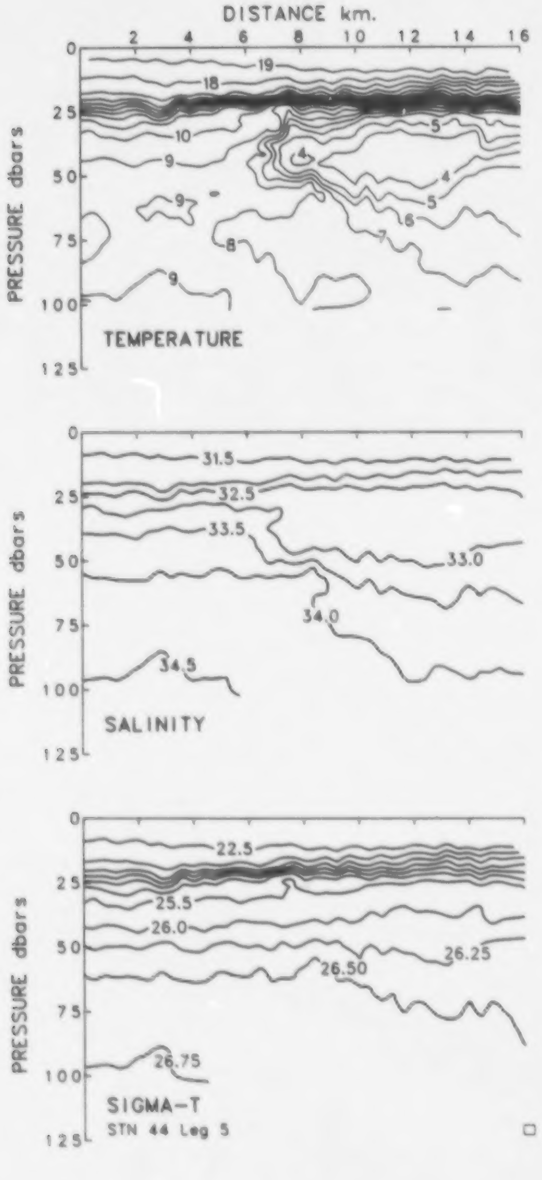
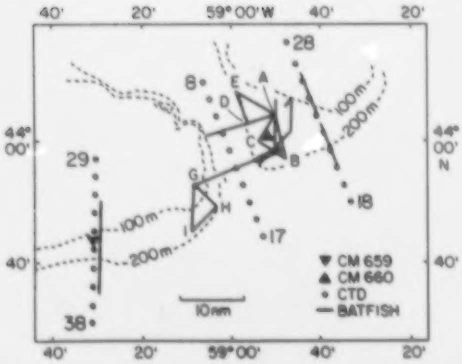

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 44 Leg 4
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 44
TIME (decimal julian days)

Fig. 68


DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 44 Leg 5


59°00'W
44° 00'
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m

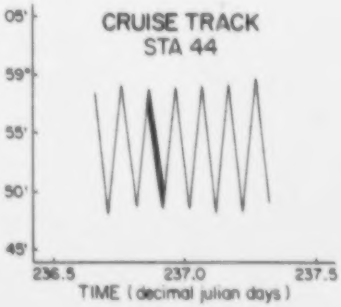

CRUISE TRACK
STA 44
TIME (decimal julian days)

Fig. 69

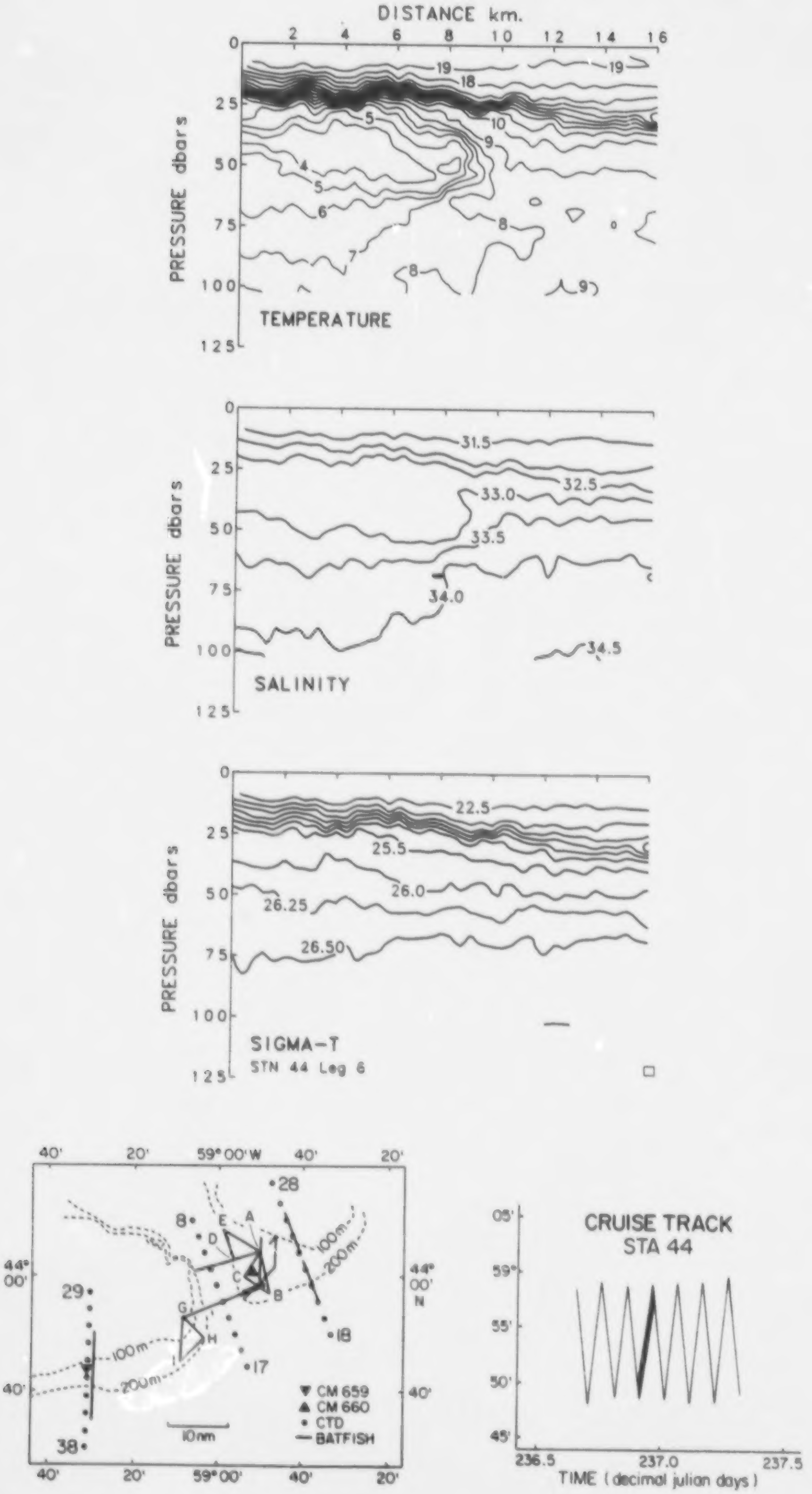

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 44 Leg 6
59°00'W
44° 00'
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 44
TIME (decimal julian days)

Fig. 70

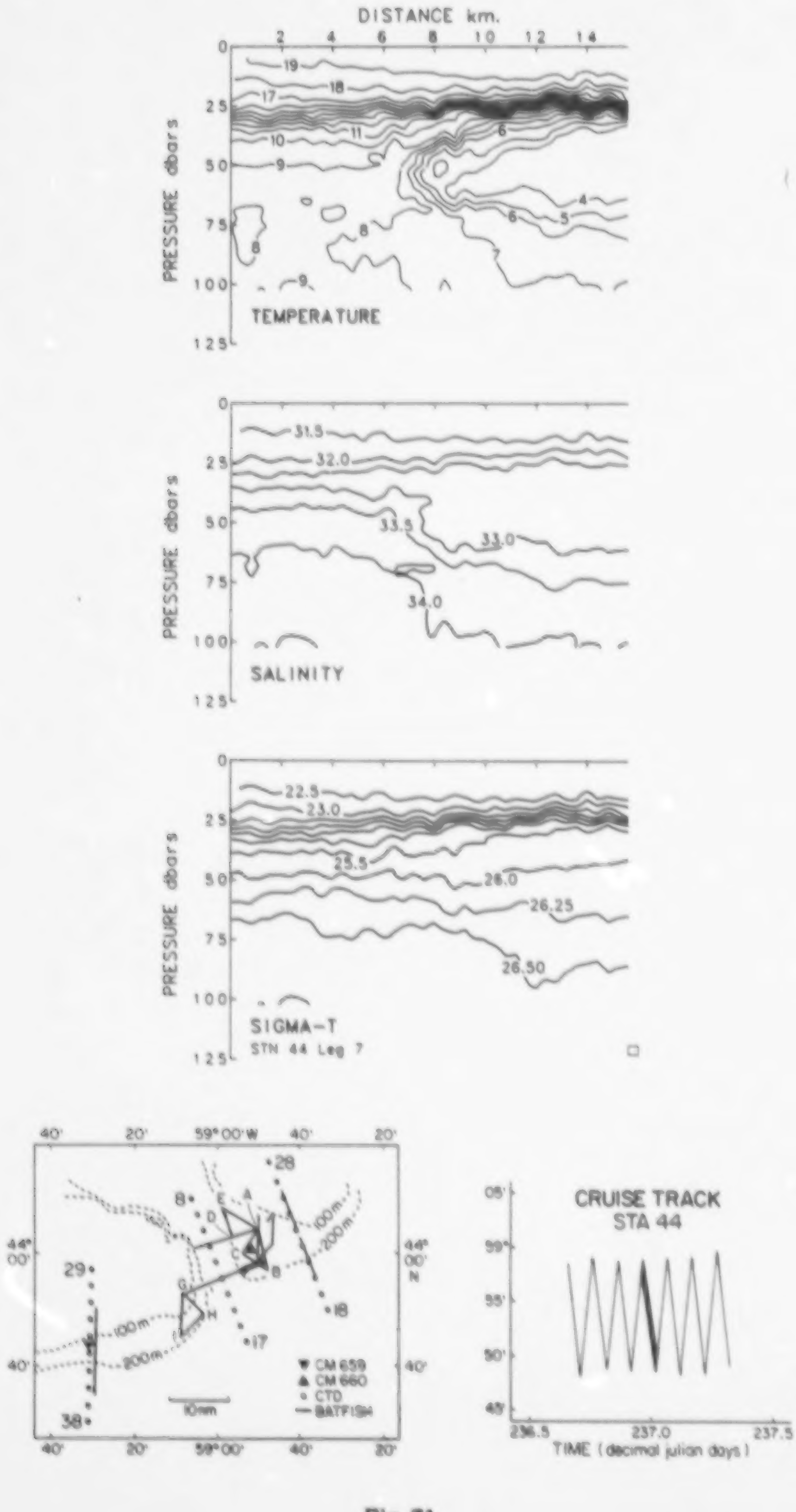

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 44 Leg 7
59° 00' W
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 44
TIME (decimal julian days)
236.5
237.0
237.5

Fig. 71

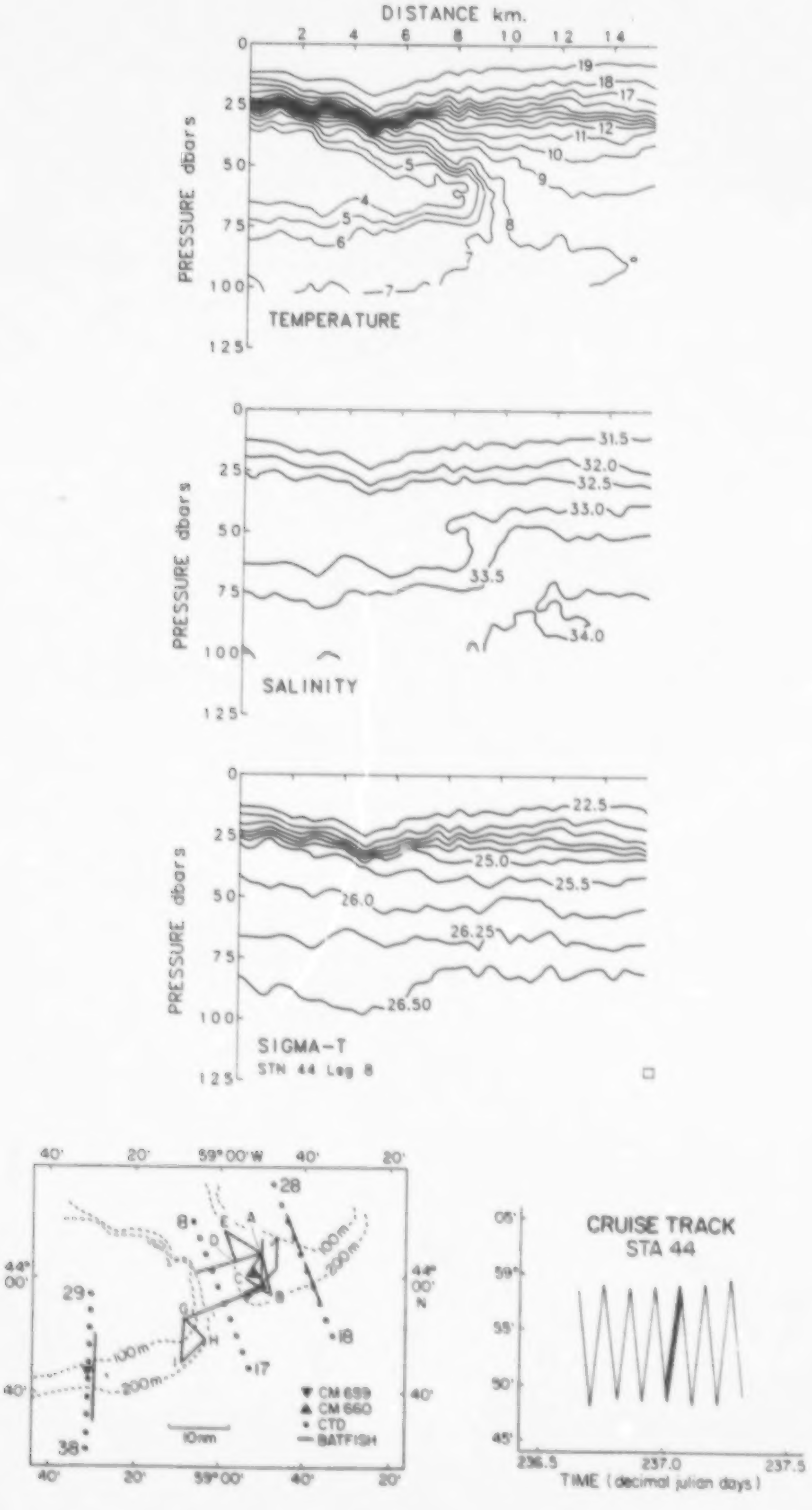
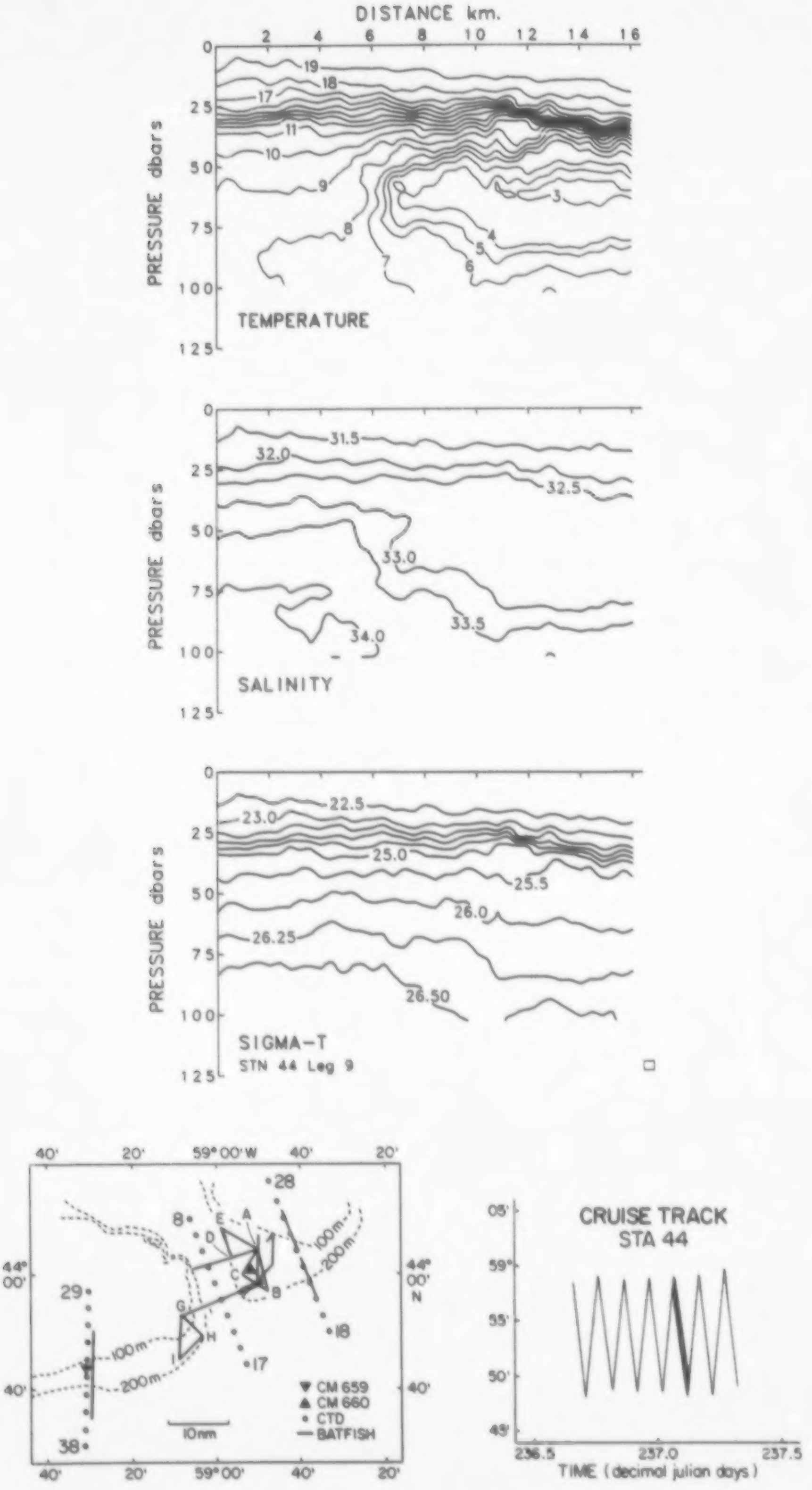

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 44 Leg 8
CRUISE TRACK
STA 44
TIME (decimal julian days)
CM 659
CM 660
CTD
BATFISH
10nm
59° 00' W

Fig. 72



DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 44 Leg 9
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
59° 00' W
44° 00'
40'
20'
CRUISE TRACK
STA 44
TIME (decimal julian days)

Fig. 73

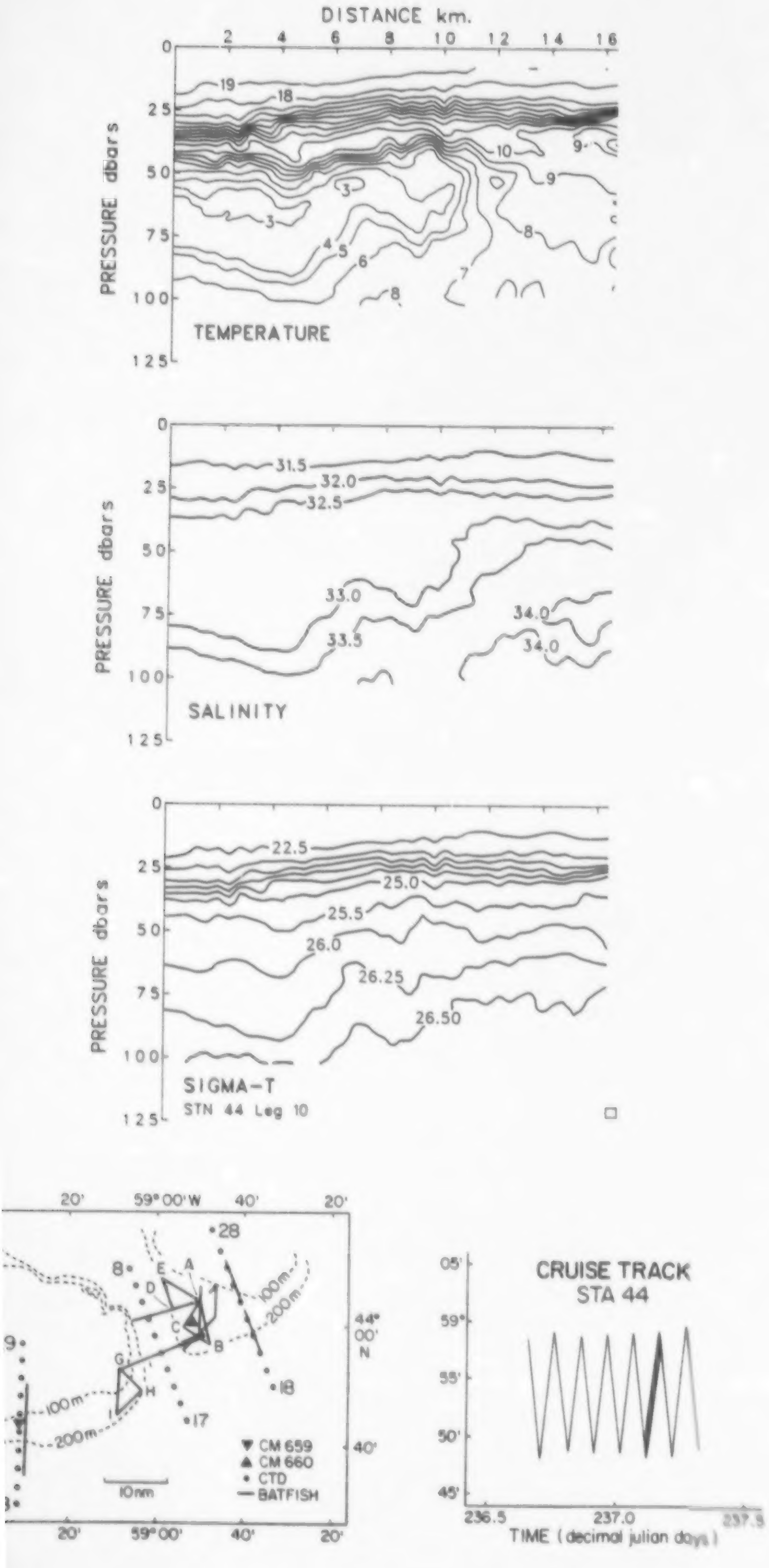

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 44 Leg 10
59° 00' W
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 44
TIME (decimal julian days)

Fig. 74

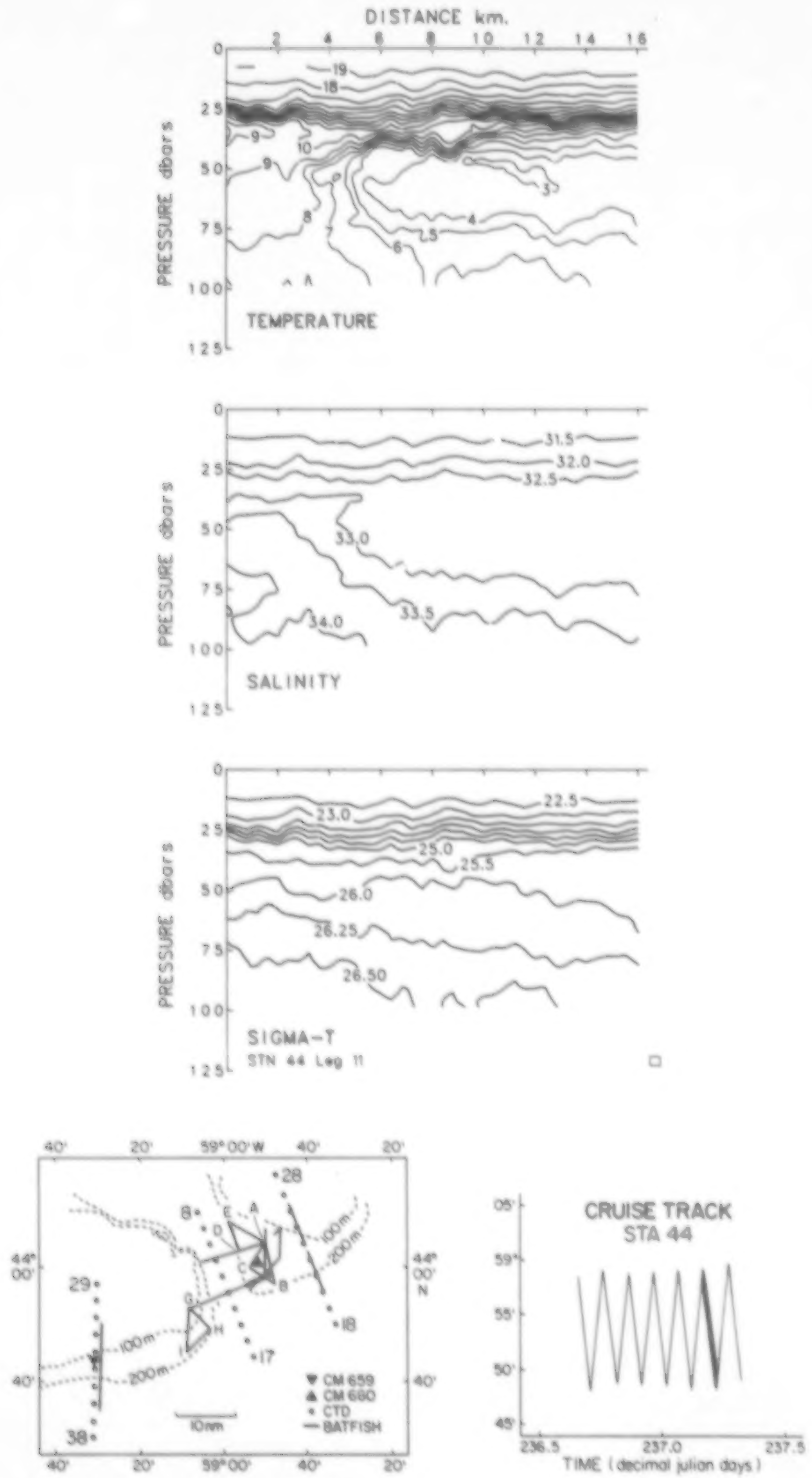

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 44 Leg 11
CRUISE TRACK
STA 44
TIME (decimal julian days)
CM 659
CM 680
CTD
BATFISH
10nm
100m
200m
59°00'W
44° 00' N

Fig. 75

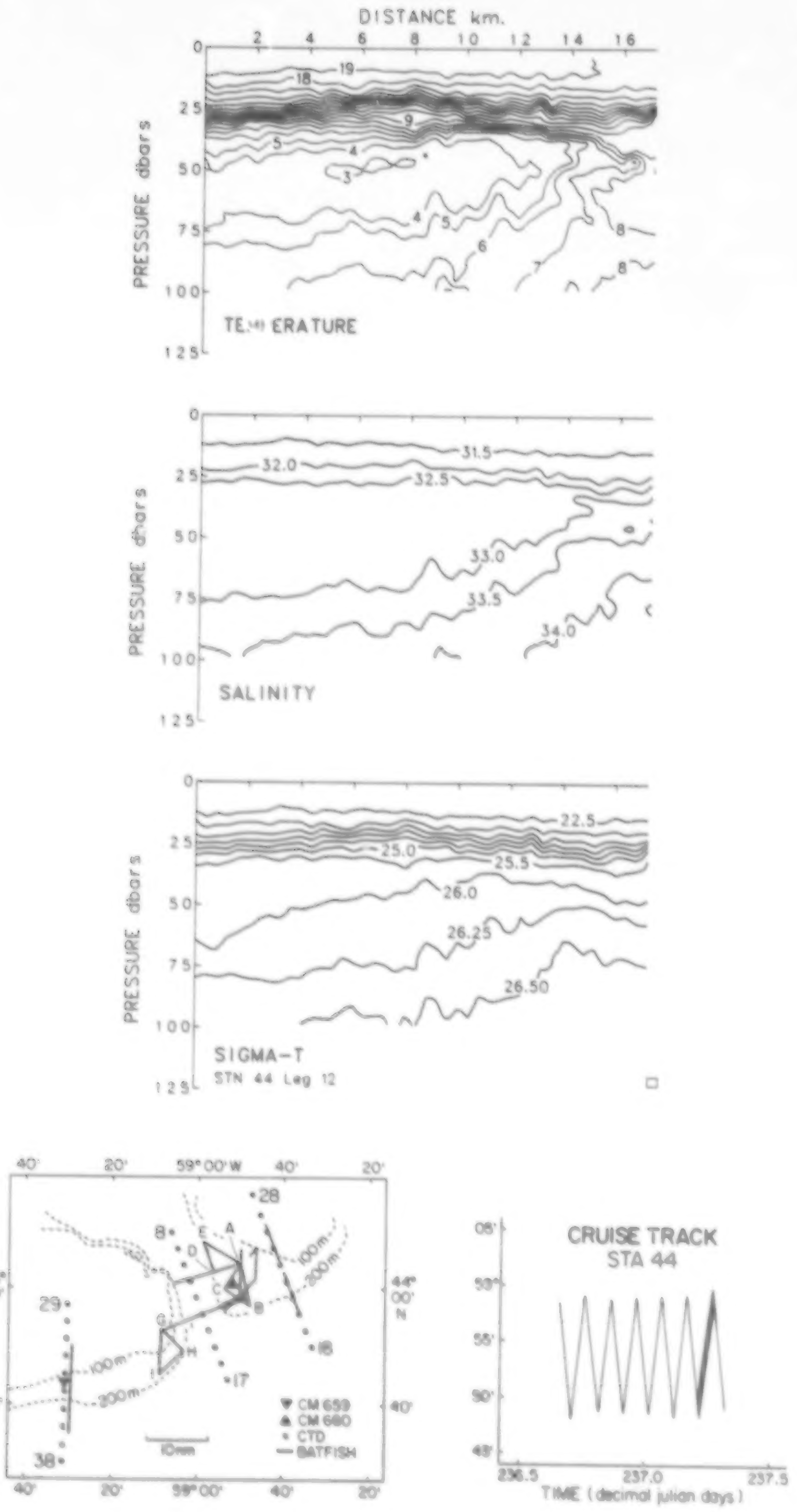
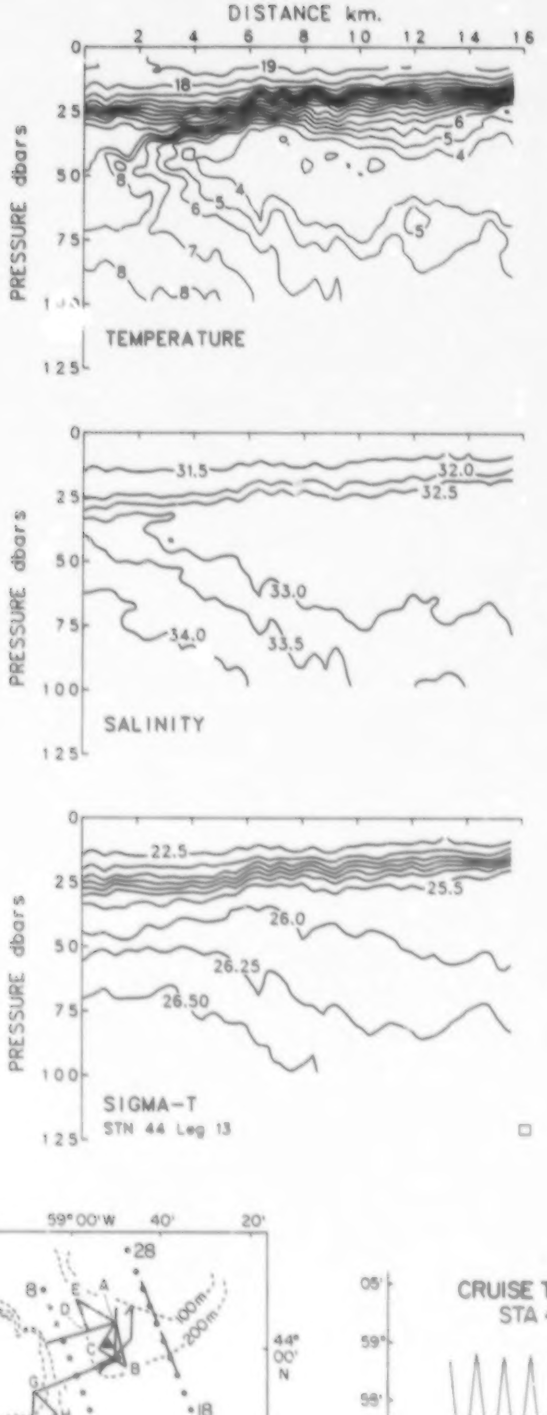

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
PRESSURE dbars
SIGMA-T
STN 44 Leg 12
59° 00' W
44° 00'
44° 00' N
CM 659
CM 660
CTD
BATFISH
10 nm
CRUISE TRACK
STA 44
TIME (decimal julian days)

Fig. 76


DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 44 Leg 13

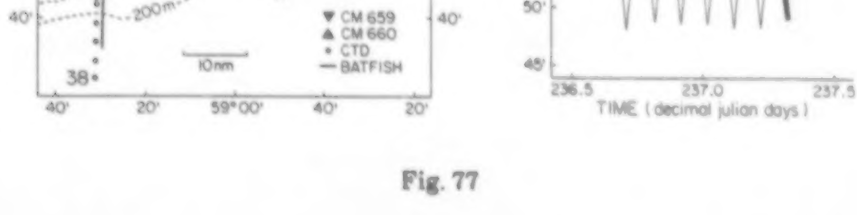

CM 659
CM 660
CTD
BATFISH
10nm
CRUISE TRACK
STA 44
TIME (decimal julian days)

Fig. 77

Figures 78-92.

BATFISH station 45: 15 sections of Temperature, Salinity and Sigma-t vs. pressure, location maps and latitude vs. time plot.

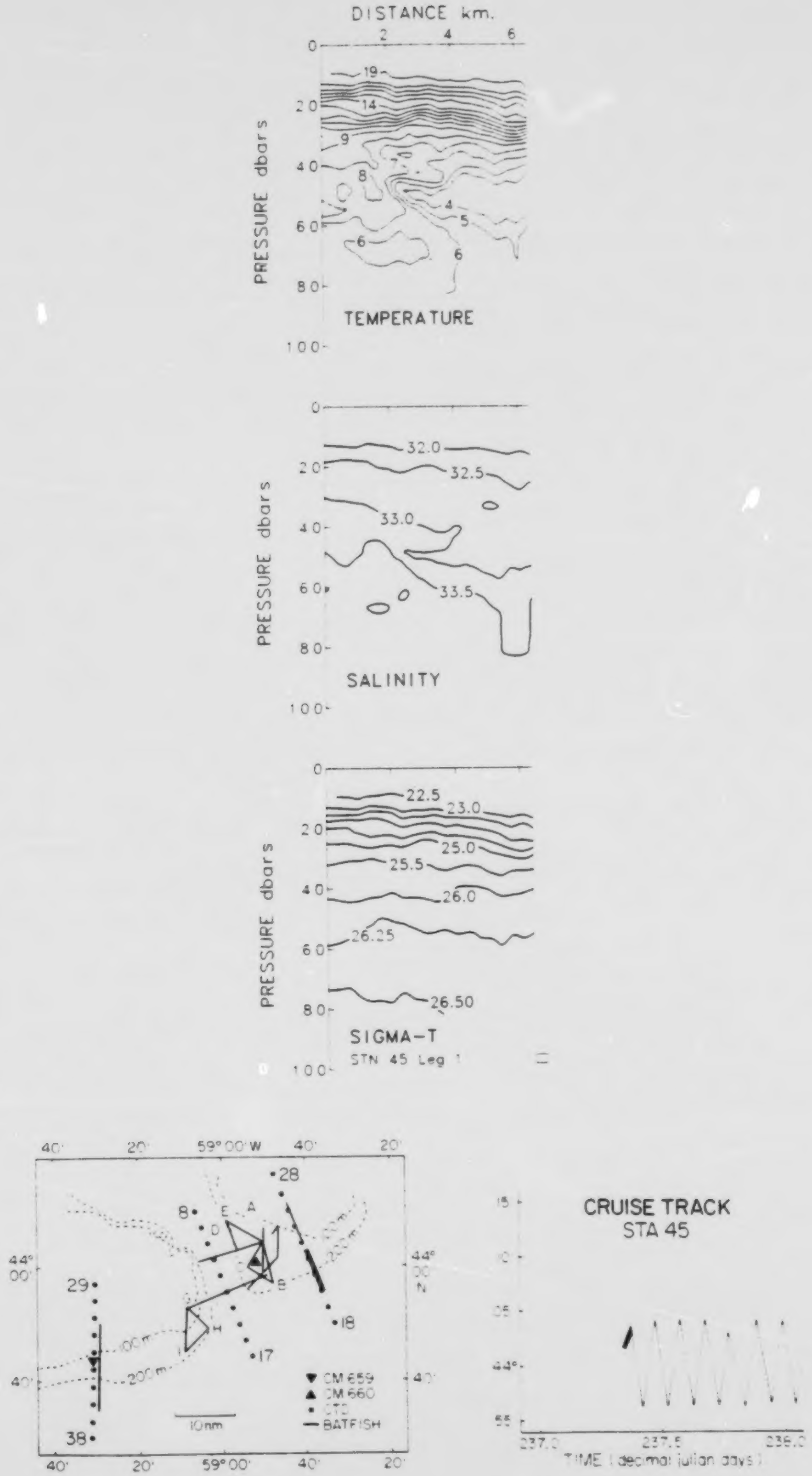

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
PRESSURE dbars
SIGMA-T
STN 45 Leg 1
CRUISE TRACK
STA 45
CM 659
CM 660
CTD
BATFISH
10nm
59° 00' W
44° 00' N
TIME (decimal julian days)

Fig. 78

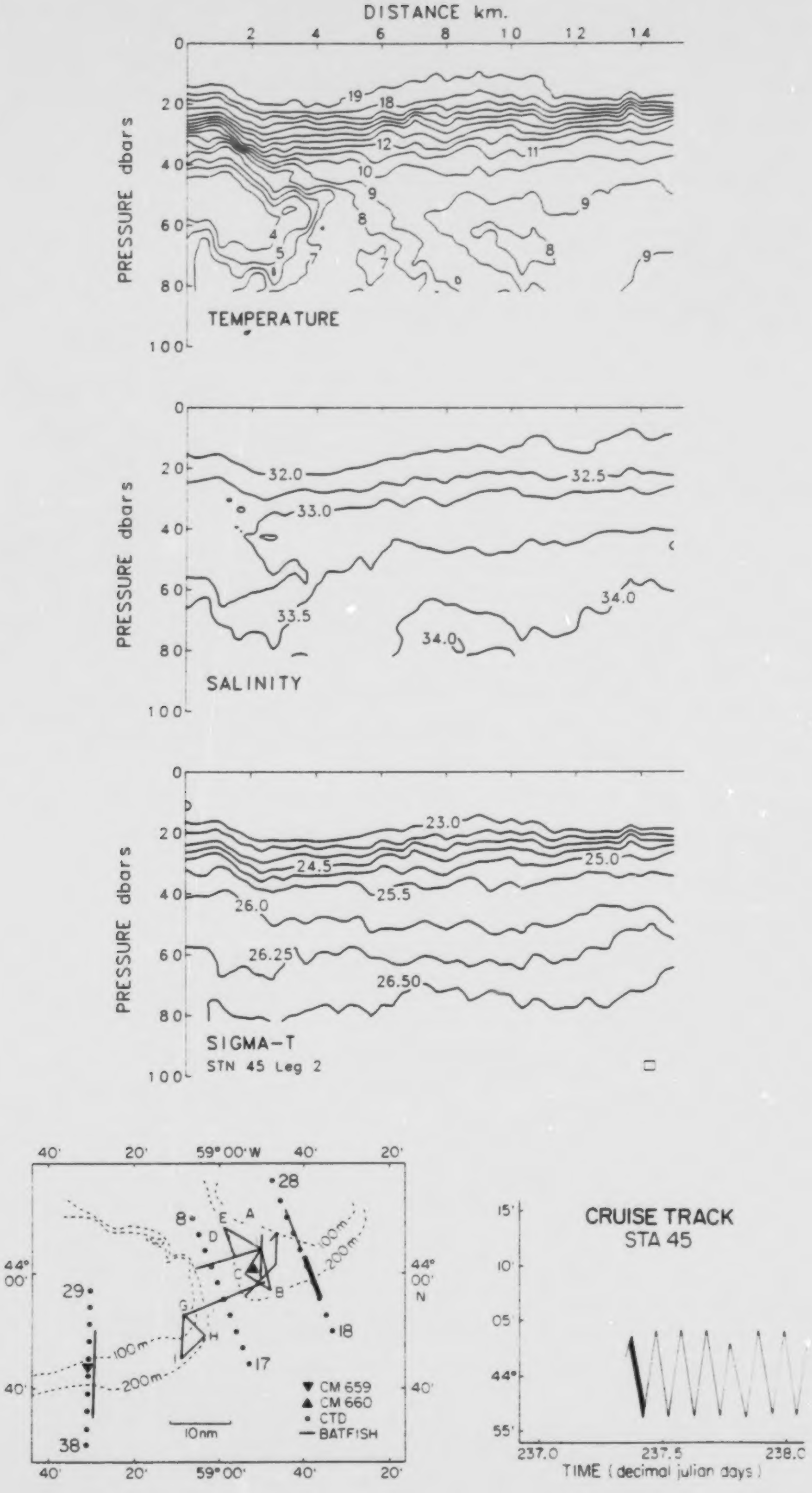

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 45 Leg 2
59° 00' W
44° 00'
44° 00' N
40'
20'
29
38
28
18
17
8
100m
200m
CM 659
CM 660
CTD
BATFISH
10nm
CRUISE TRACK
STA 45
TIME (decimal julian days)

Fig. 79

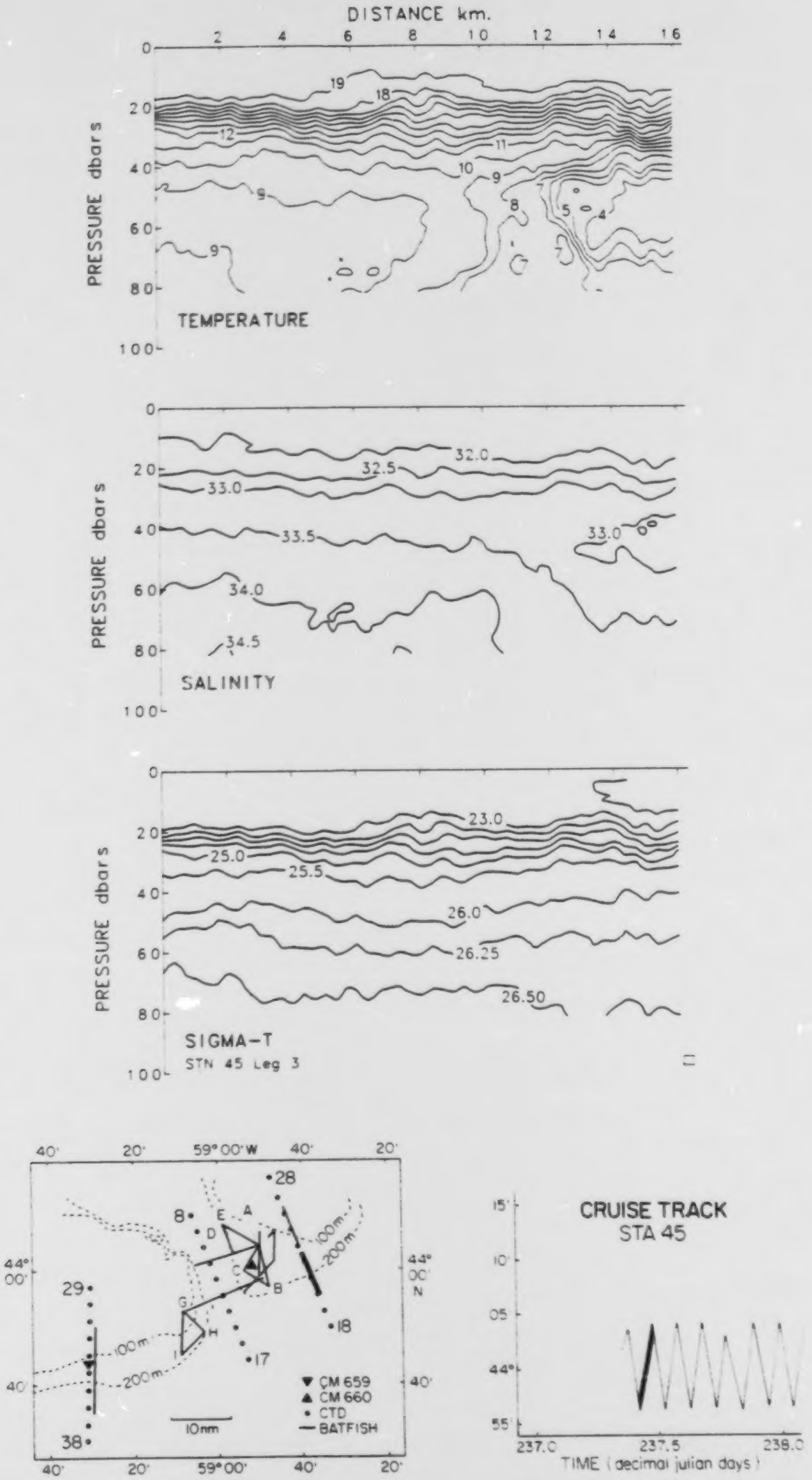

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 45 Leg 3
CM 659
CM 660
CTD
BATFISH
10nm
CRUISE TRACK
STA 45
TIME (decimal julian days)

Fig. 80

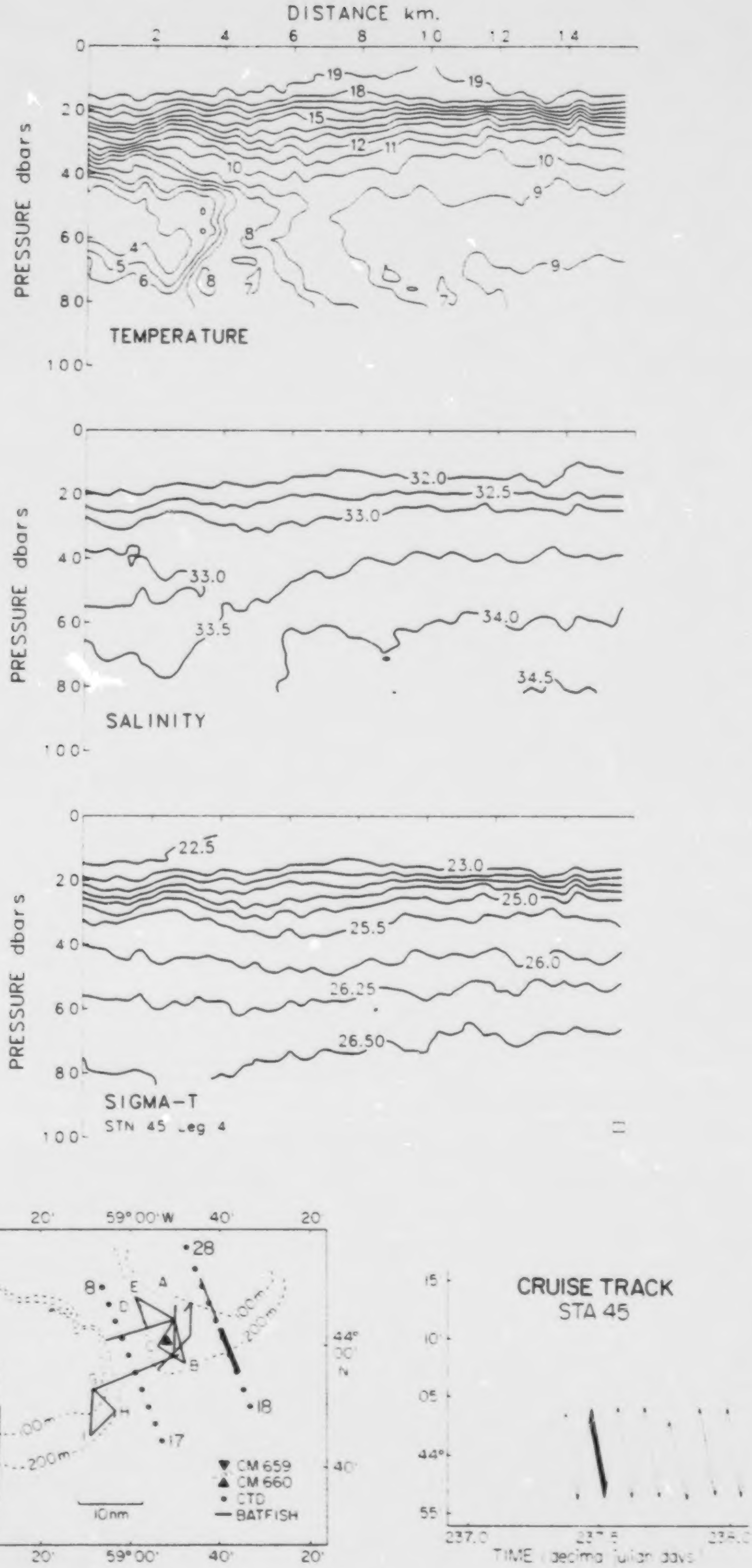

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 45 Leg 4
59° 00' W
44° 00'
CM 659
CM 660
CTD
BATFISH
10nm
CRUISE TRACK
STA 45

Fig. 81

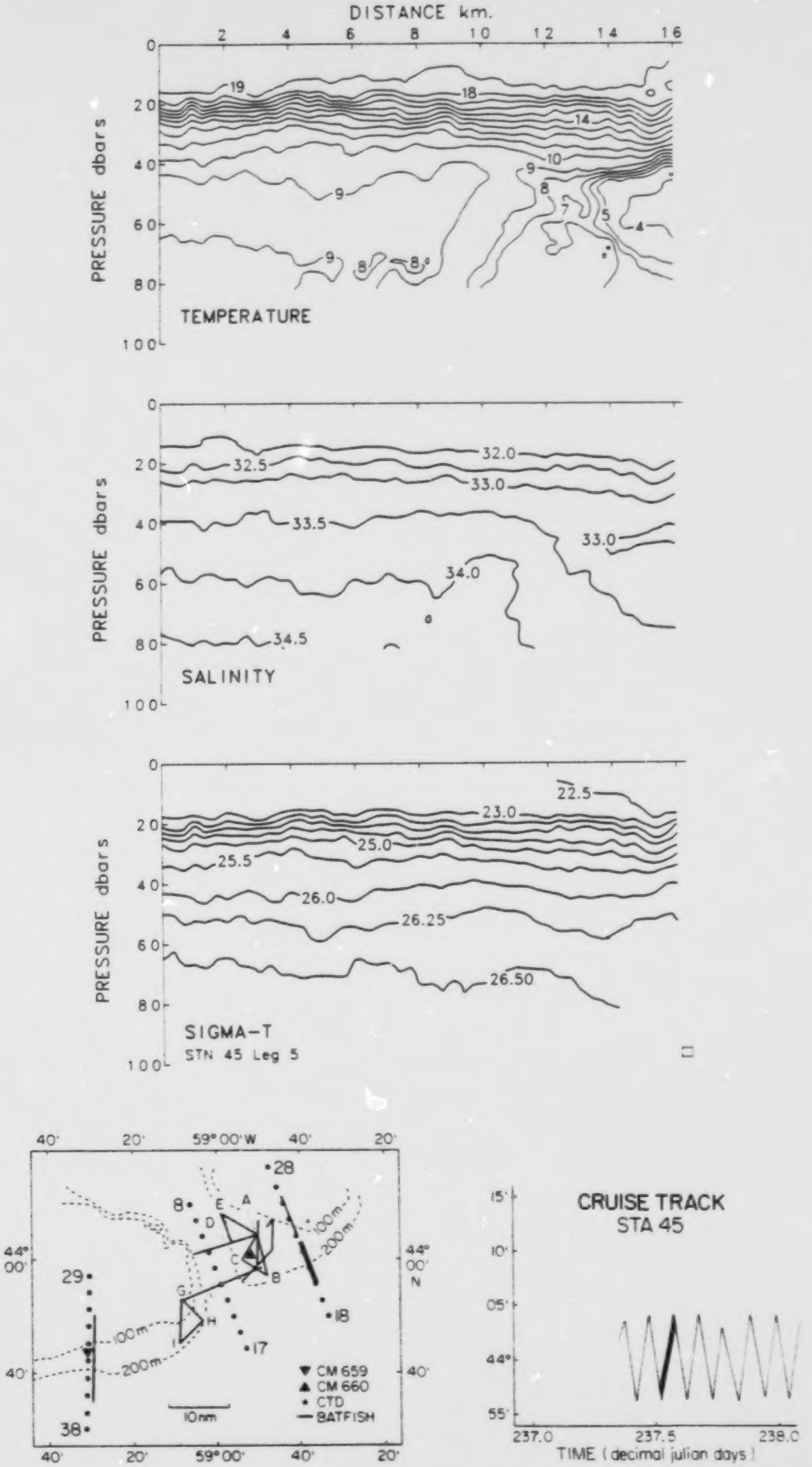

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 45 Leg 5
59° 00' W
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 45
TIME (decimal julian days)

Fig. 82

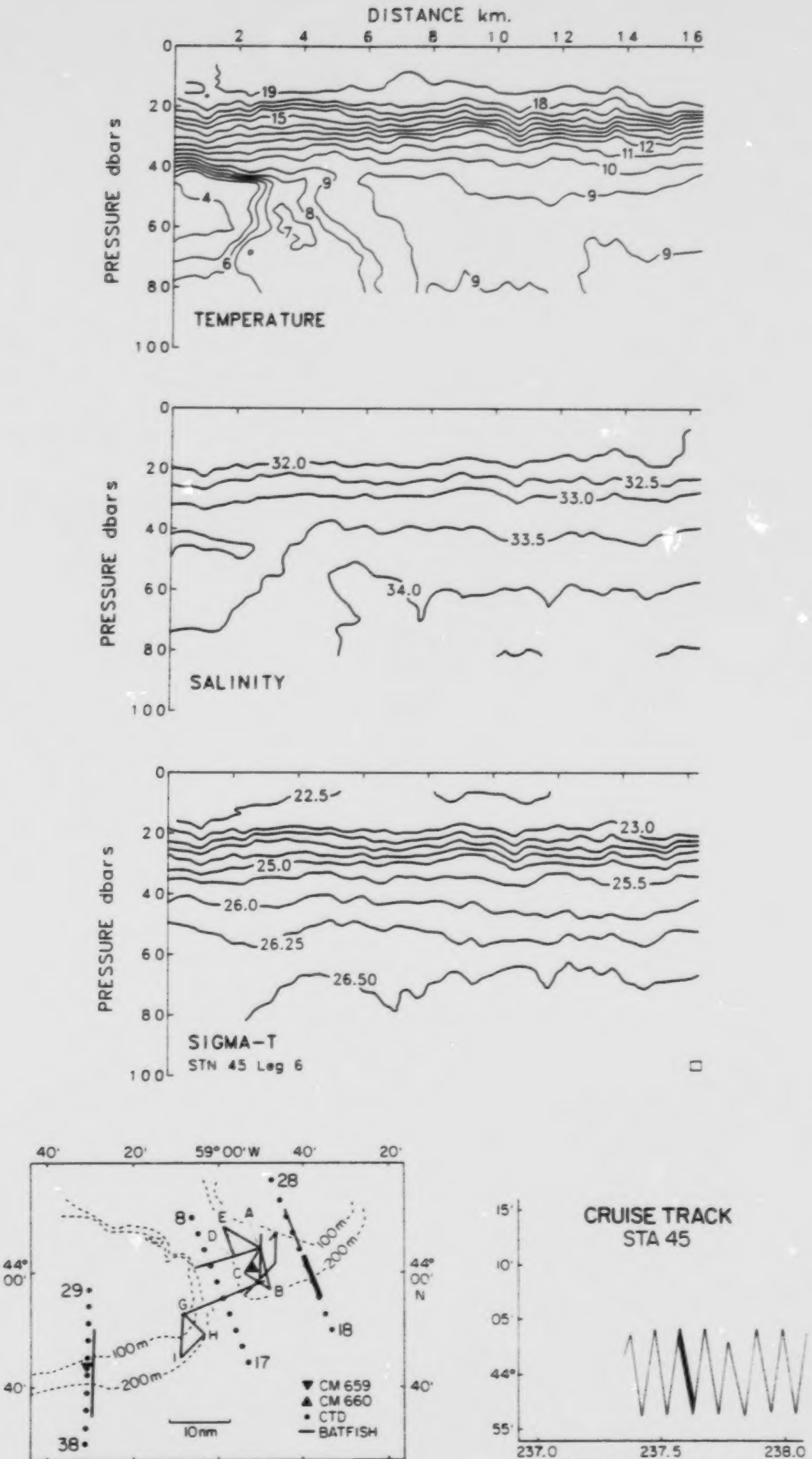

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 45 Leg 6
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
59°00'W
44° 00' N
CRUISE TRACK
STA 45
TIME (decimal julian days)

Fig. 83

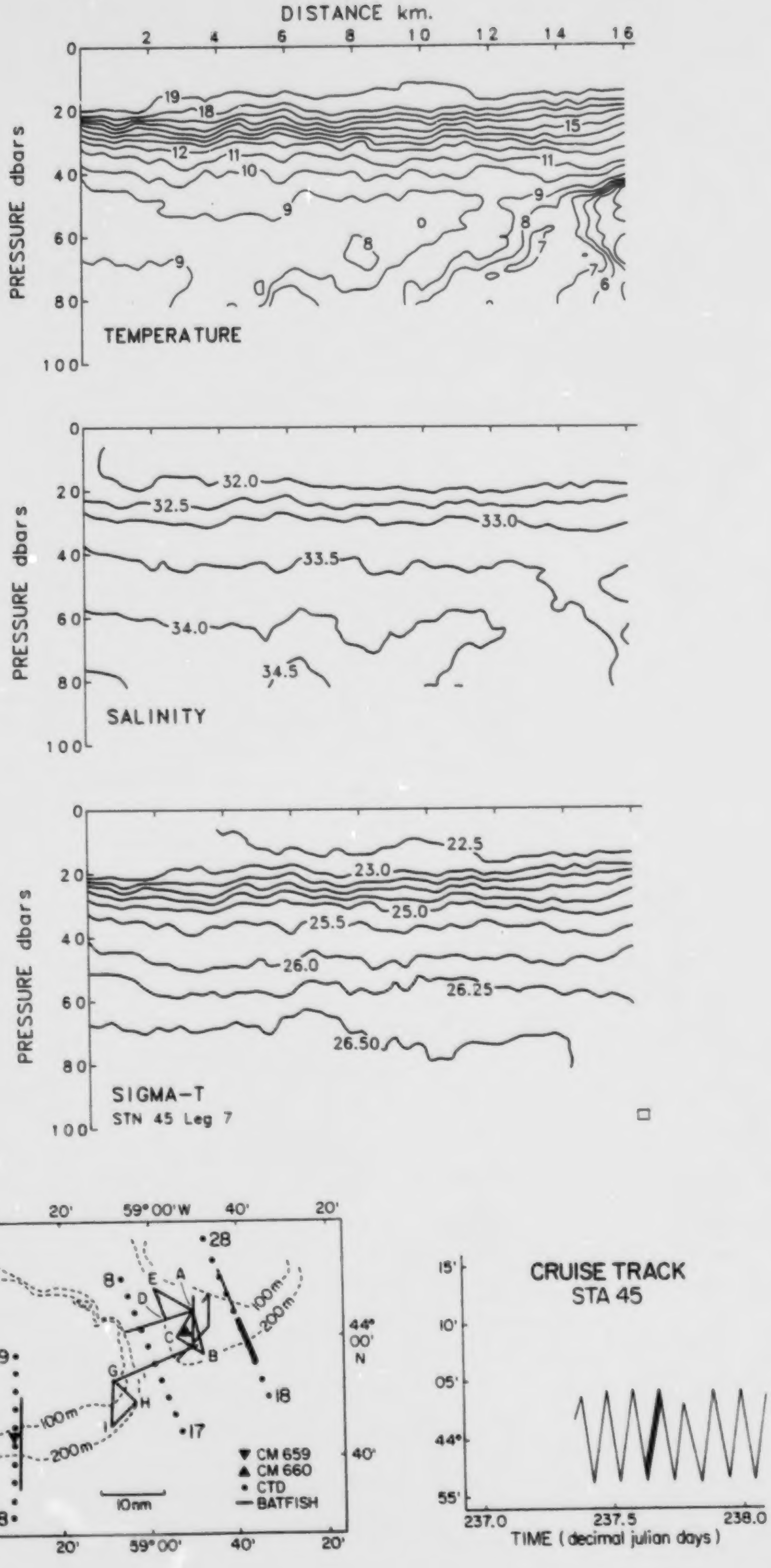

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 45 Leg 7
59° 00'W
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
CRUISE TRACK
STA 45
TIME (decimal julian days)

Fig. 84

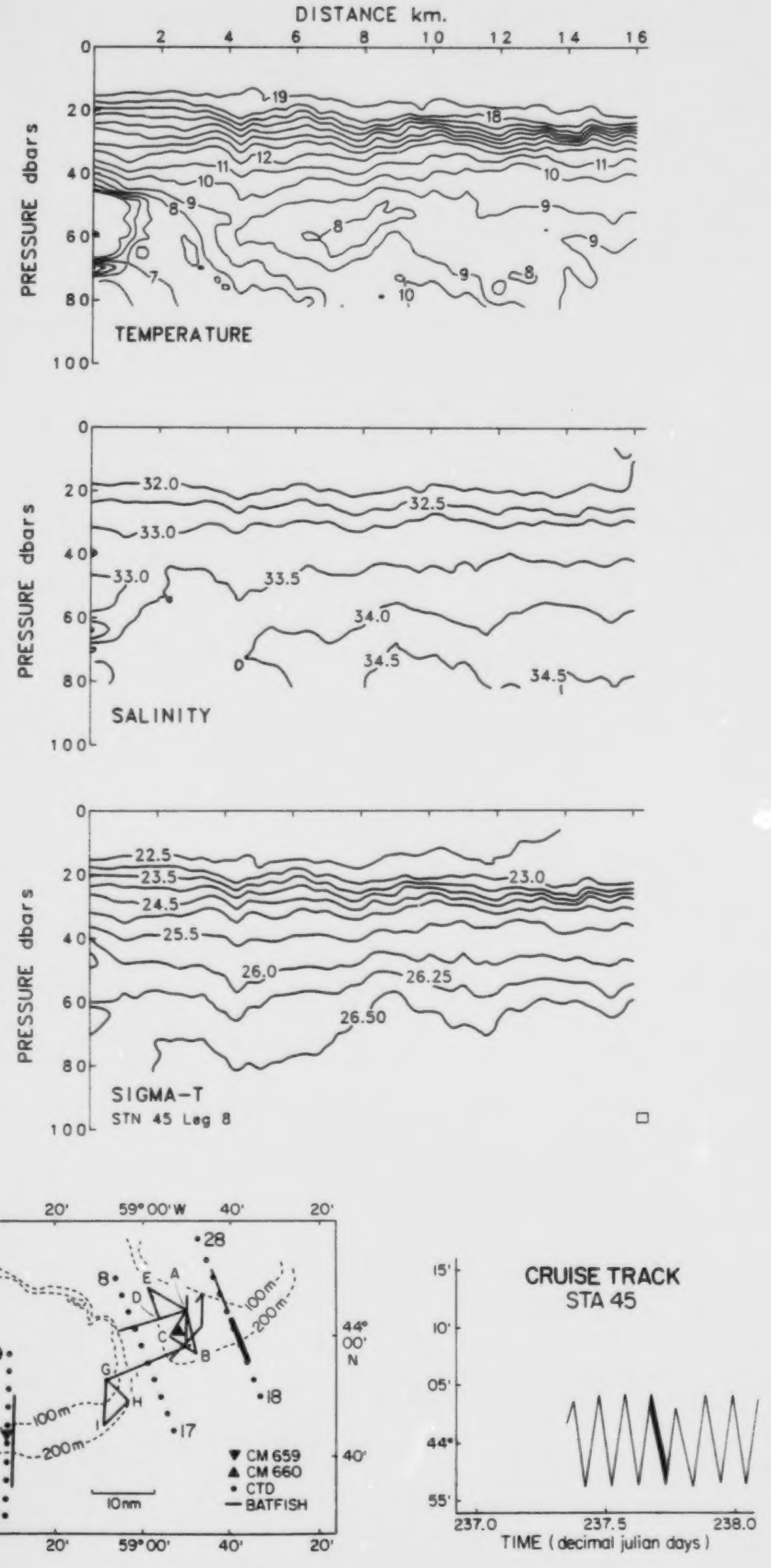

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 45 Leg 8
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
59°00'W
44° 00' N
CRUISE TRACK
STA 45
TIME (decimal julian days)

Fig. 85

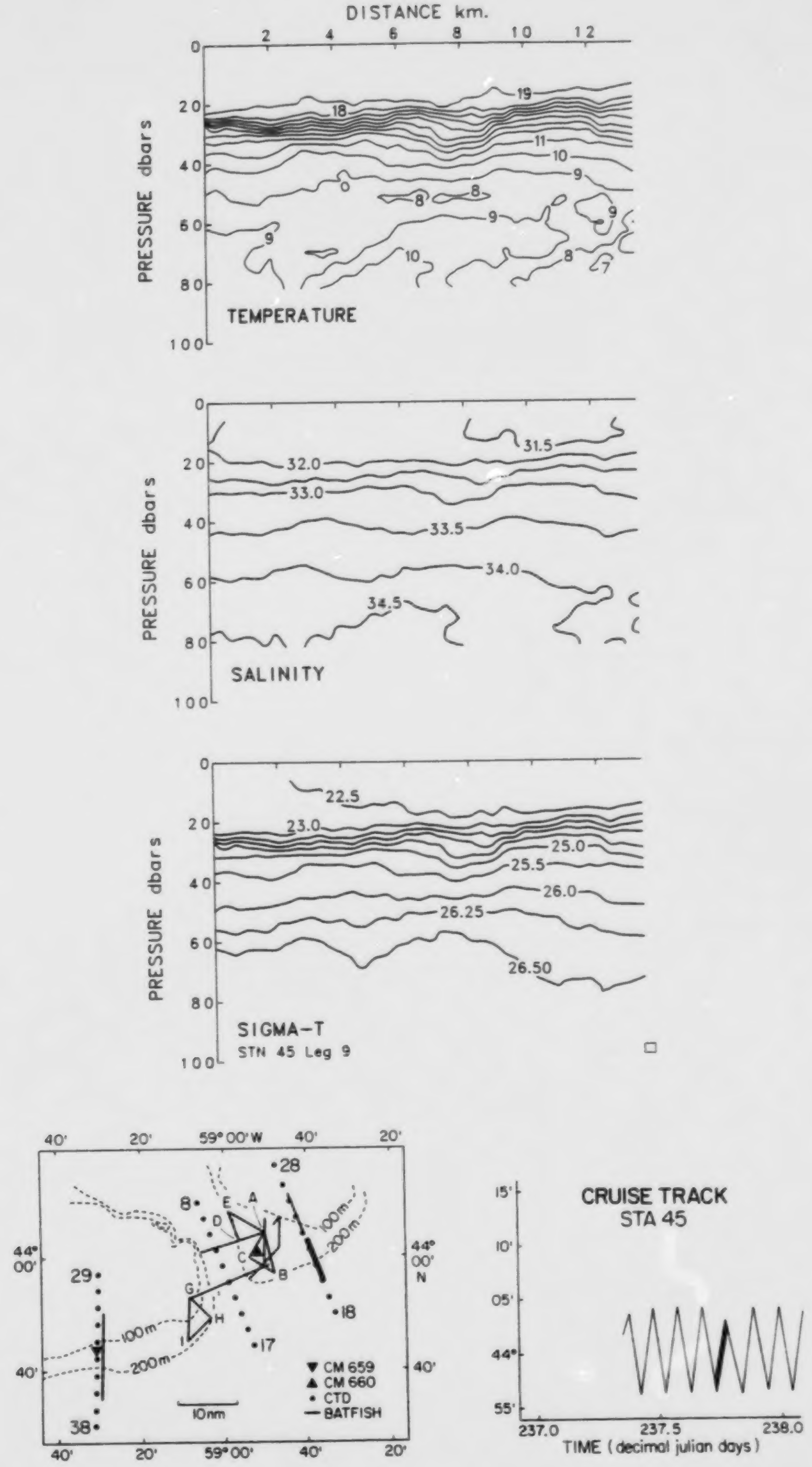

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 45 Leg 9
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
59° 00' W
44° 00'
44° 00' N
40'
20'
CRUISE TRACK
STA 45
TIME (decimal julian days)
237.0
237.5
238.0

Fig. 86

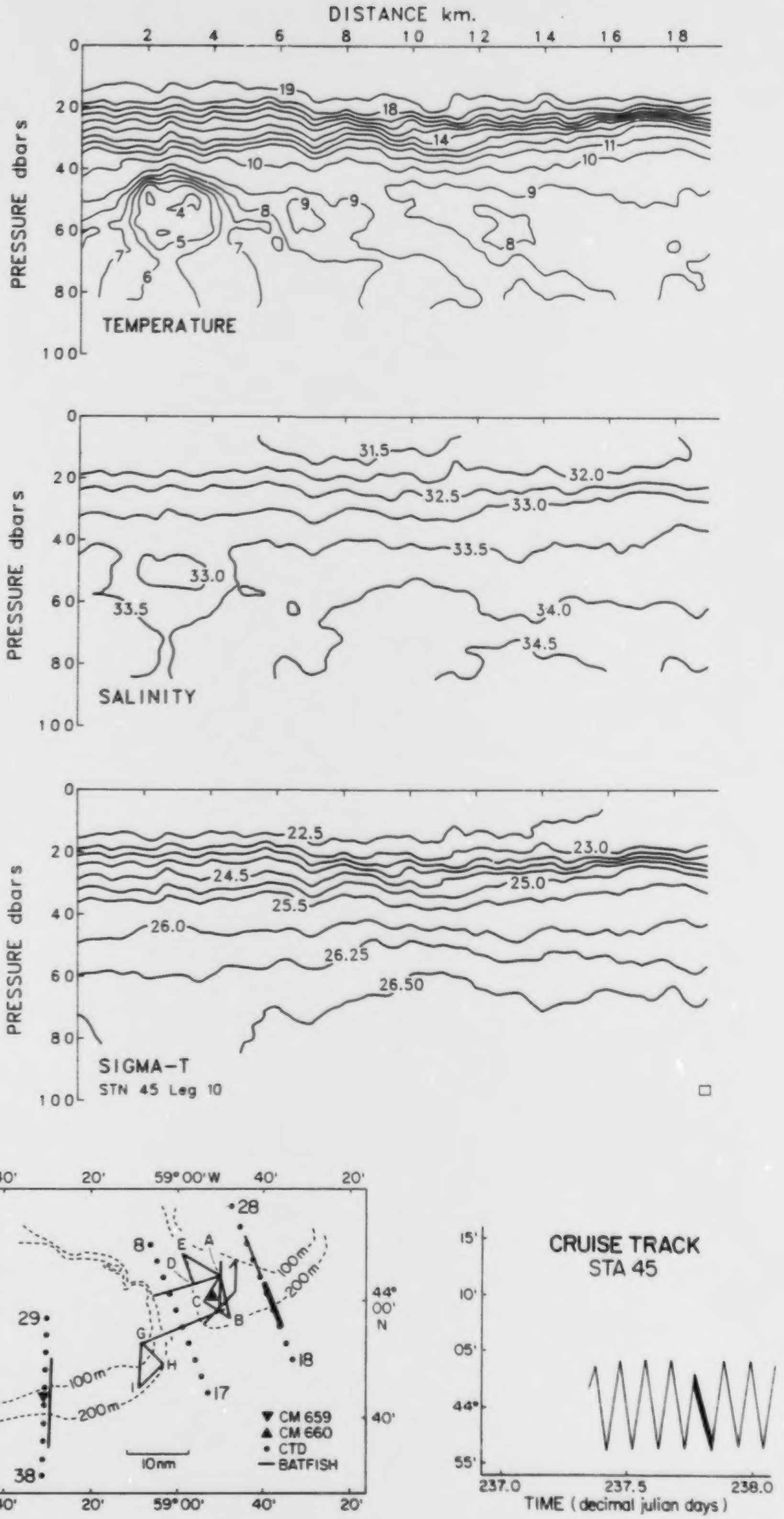

DISTANCE km.
2 4 6 8 10 12 14 16 18
PRESSURE dbars
0 20 40 60 80 100
TEMPERATURE
19 18 14 11 10 10 9 9 9 8 8 4 5 7 7 6
SALINITY
31.5 32.0 32.5 33.0 33.5 33.0 33.5 34.0 34.5
SIGMA-T
STN 45 Leg 10
22.5 23.0 24.5 25.0 25.5 26.0 26.25 26.50
40' 20' 59° 00' W 40' 20'
44° 00' N
40'
28 8 E A D C B G H I 29 17 18 38
100m 200m
10nm
CM 659
CM 660
CTD
BATFISH
CRUISE TRACK
STA 45
15' 10' 05' 44° 55'
237.0 237.5 238.0
TIME (decimal julian days)

Fig. 87

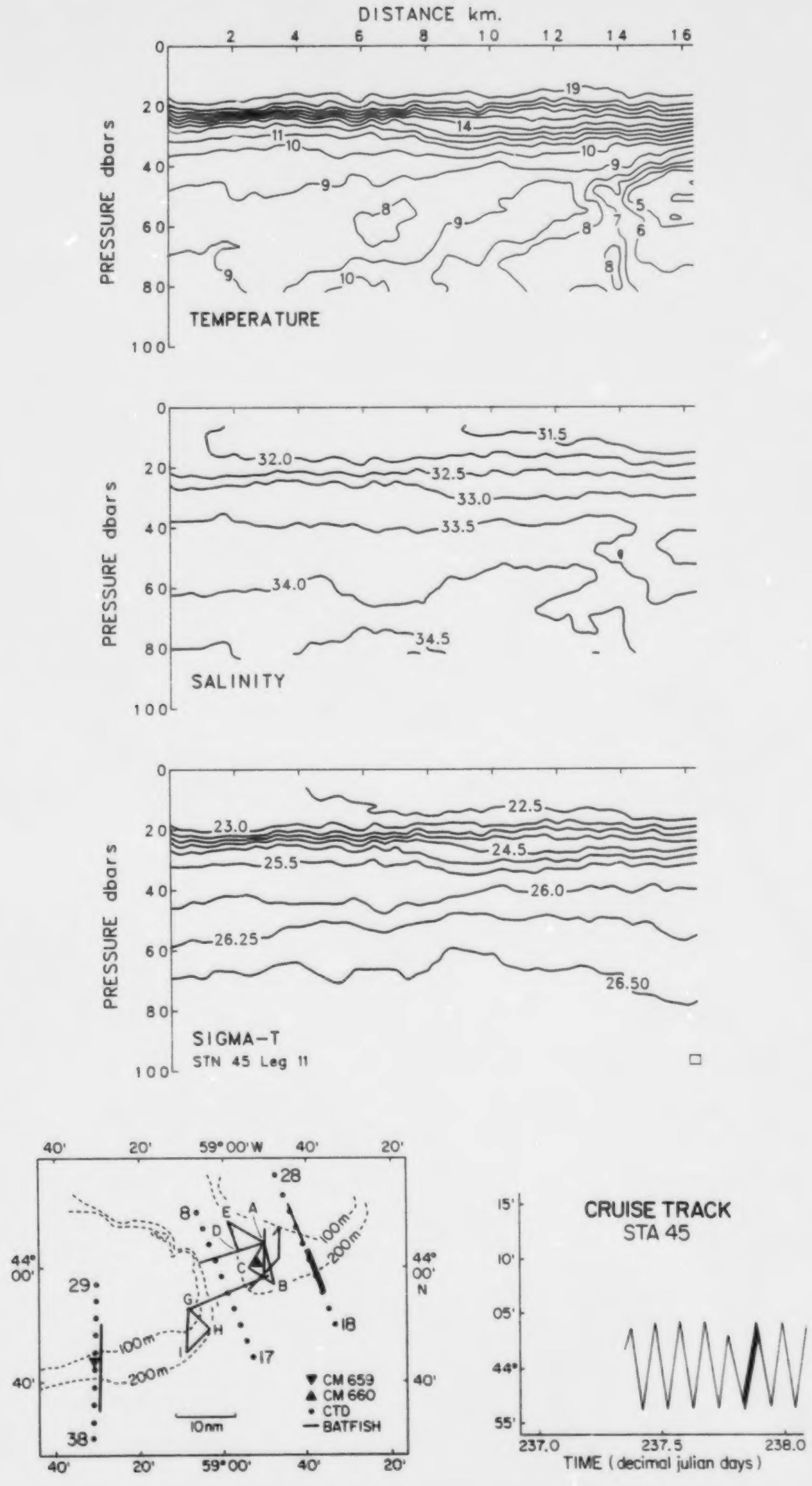
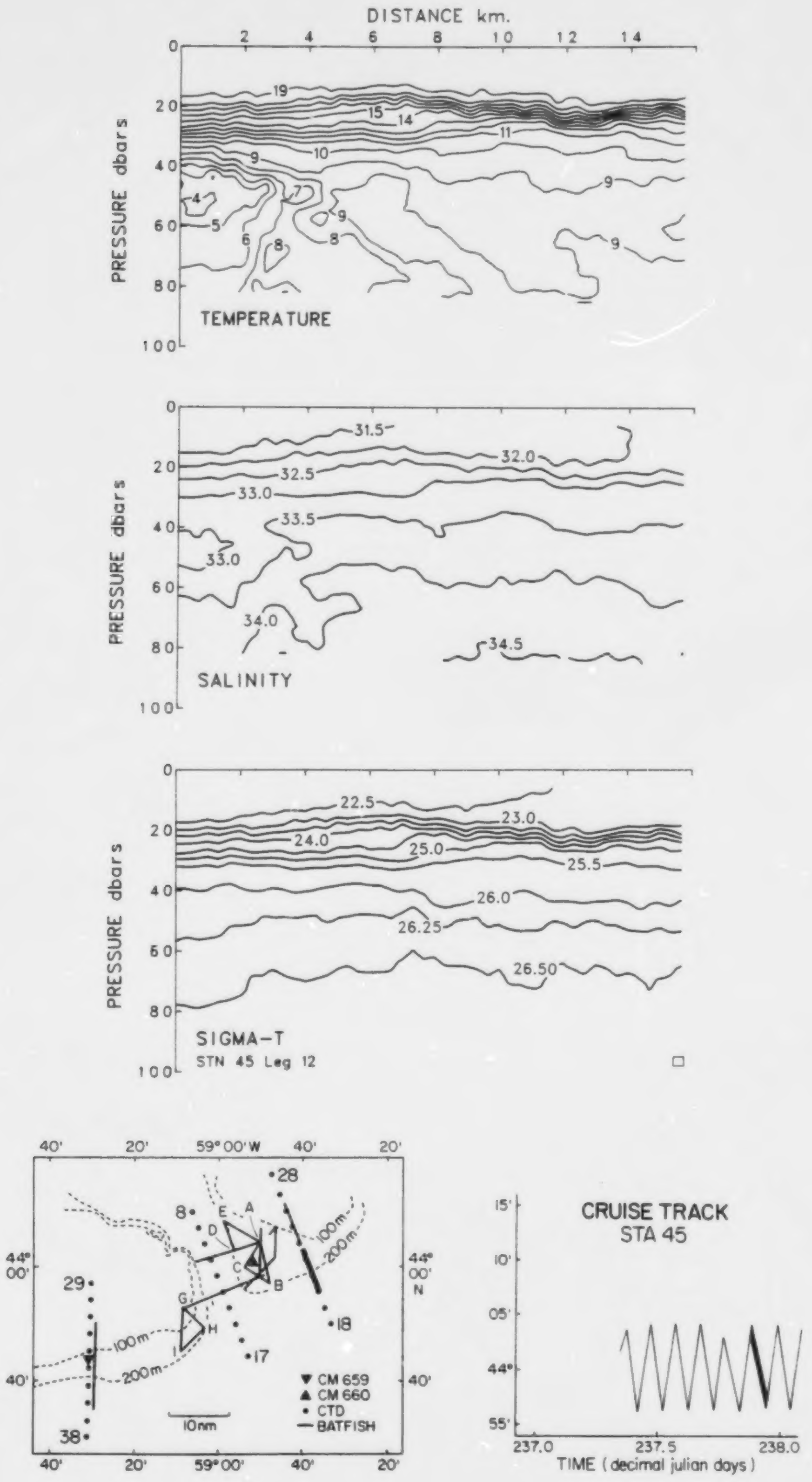

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 45 Leg 11
59°00'W
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 45
TIME (decimal julian days)

Fig. 88



DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 45 Leg 12
59°00'W
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 45
TIME (decimal julian days)

Fig. 89

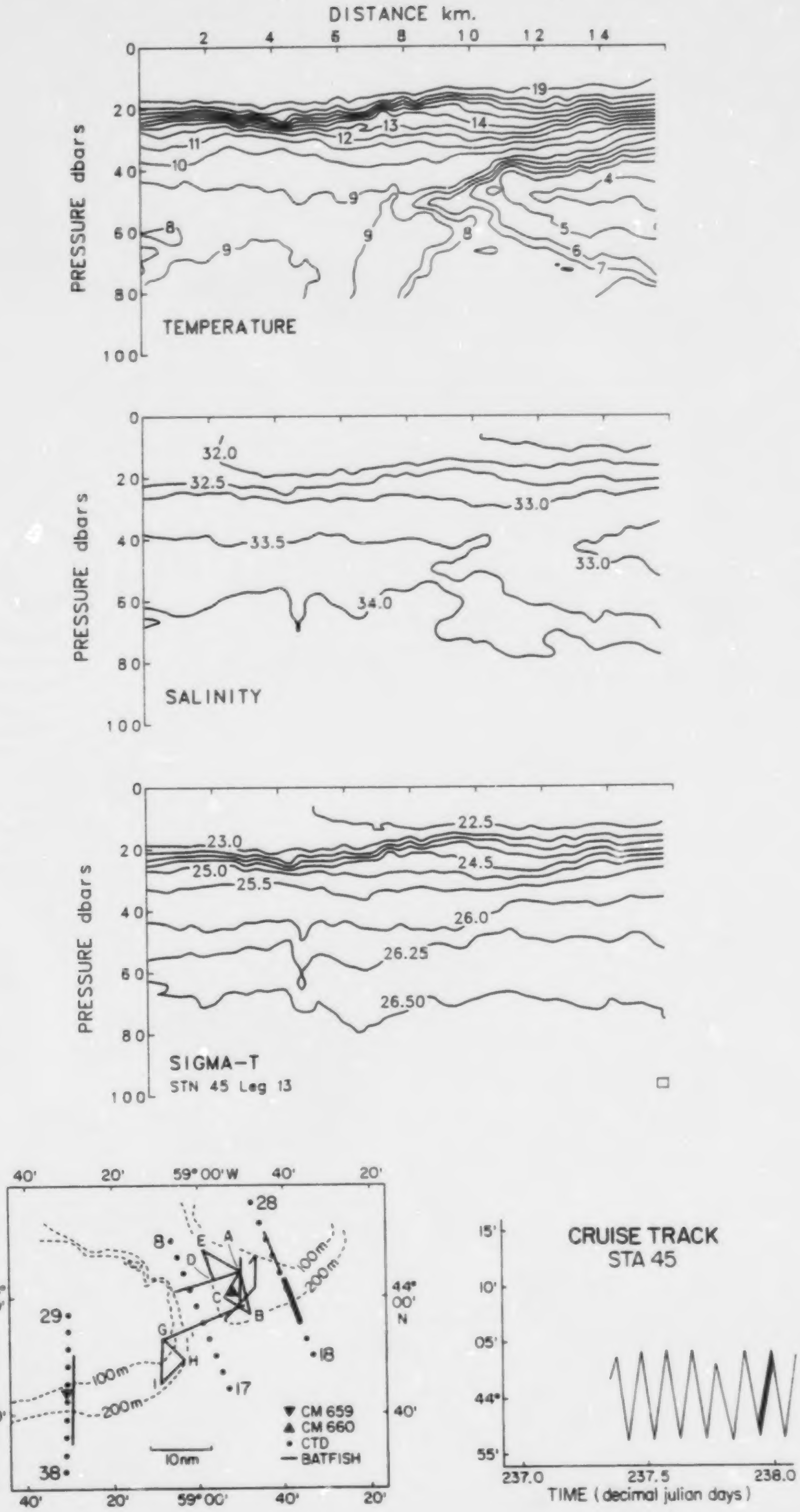

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 45 Leg 13
CM 659
CM 660
CTD
BATFISH
10nm
59° 00'W
44° 00' N
CRUISE TRACK
STA 45
TIME (decimal julian days)

Fig. 90

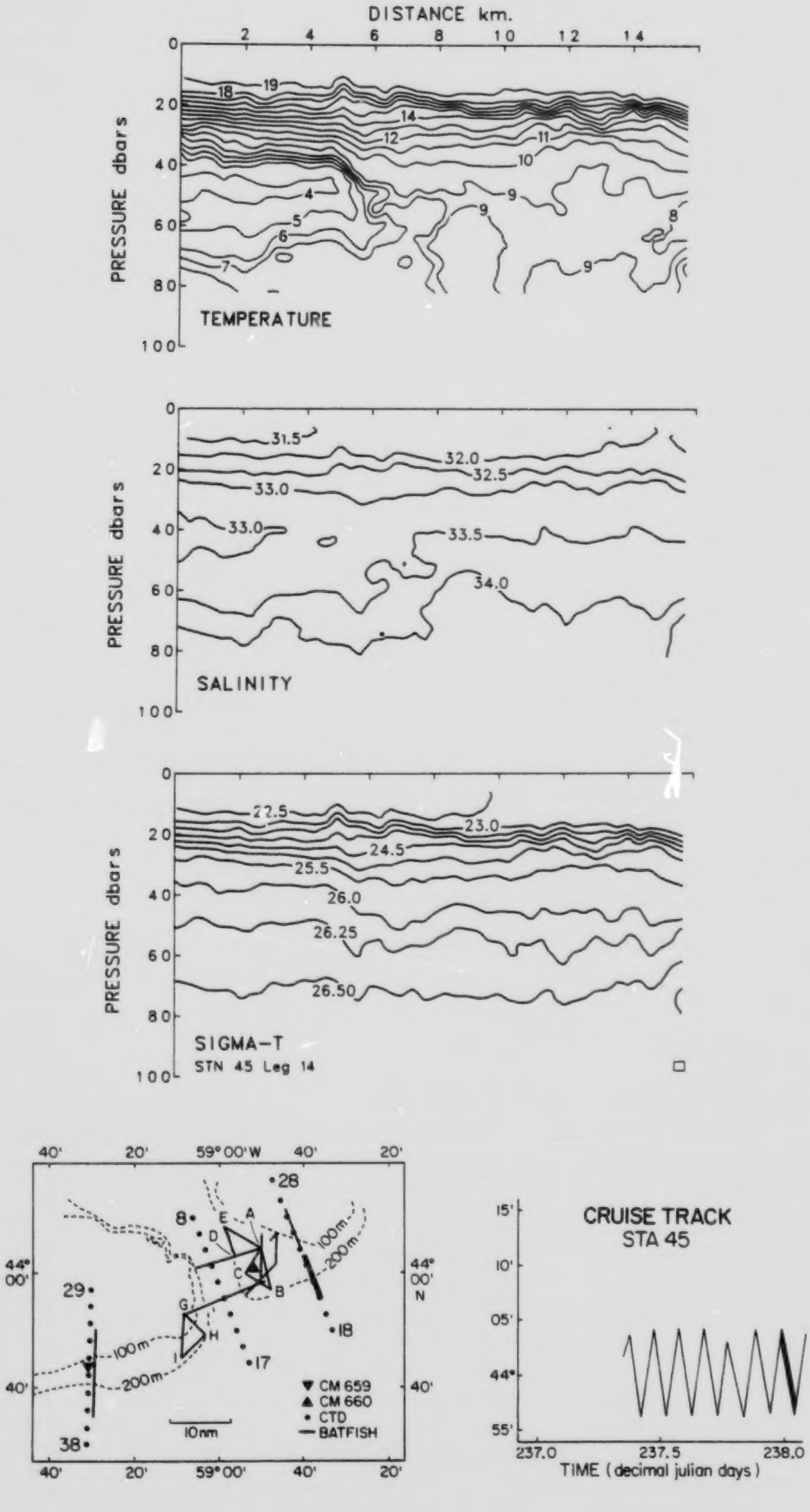

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 45 Leg 14
59°00'W
44° 00'
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 45
TIME (decimal julian days)

Fig. 91

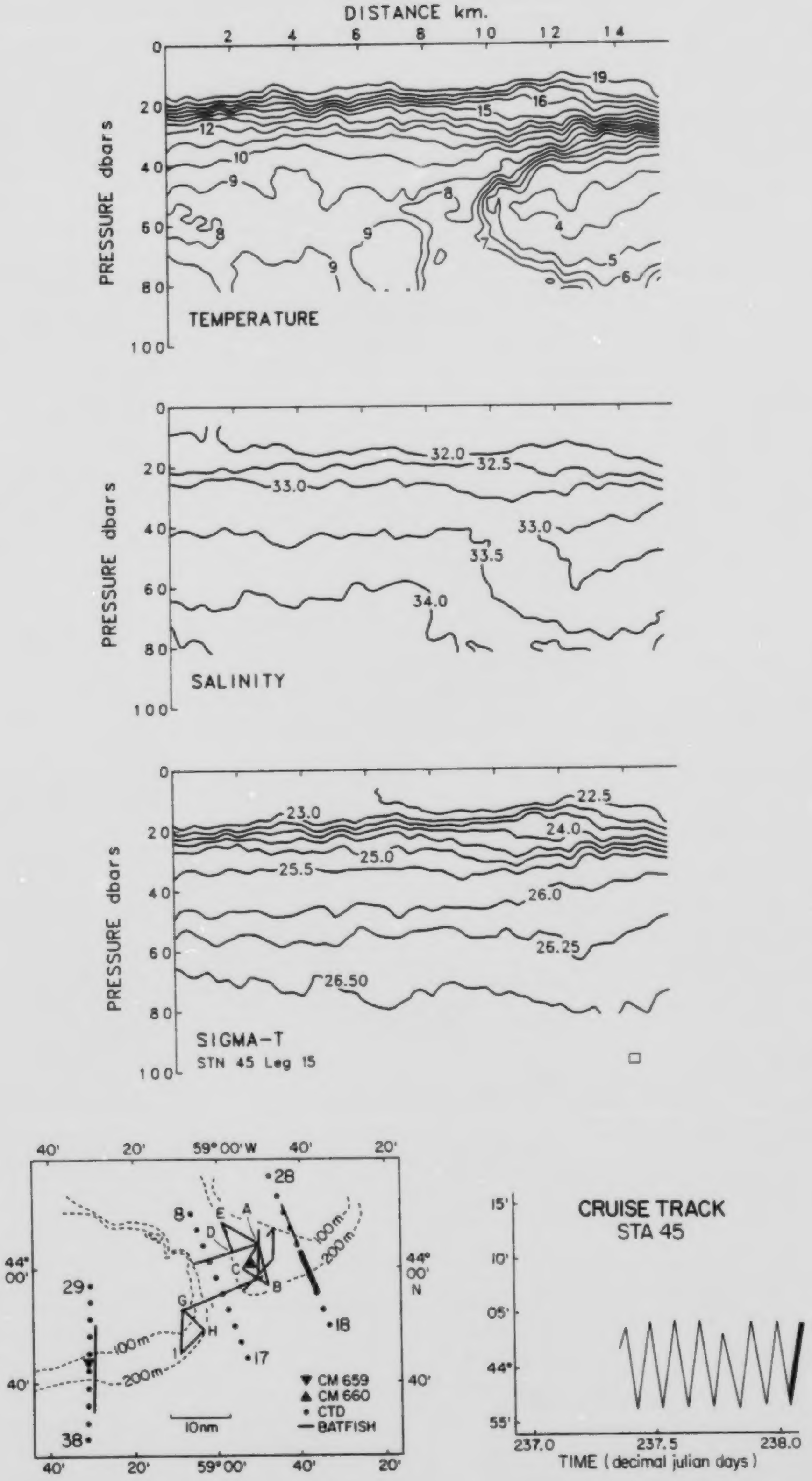

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 45 Leg 15
19
16
15
12
10
9
8
7
5
6
4
32.0
32.5
33.0
33.5
34.0
22.5
23.0
24.0
25.0
25.5
26.0
26.25
26.50
59°00'W
44° 00' N
40'
20'
29
28
8
18
17
38
A
B
C
D
E
G
H
I
100m
200m
10nm
▼ CM 659
▲ CM 660
• CTD
— BATFISH
CRUISE TRACK
STA 45
TIME (decimal julian days)
237.0
237.5
238.0

Fig. 92

Figures 93-106.

BATFISH station 46: 14 sections of Temperature, Salinity and Sigma-t vs. pressure, location maps and latitude vs. time plot.

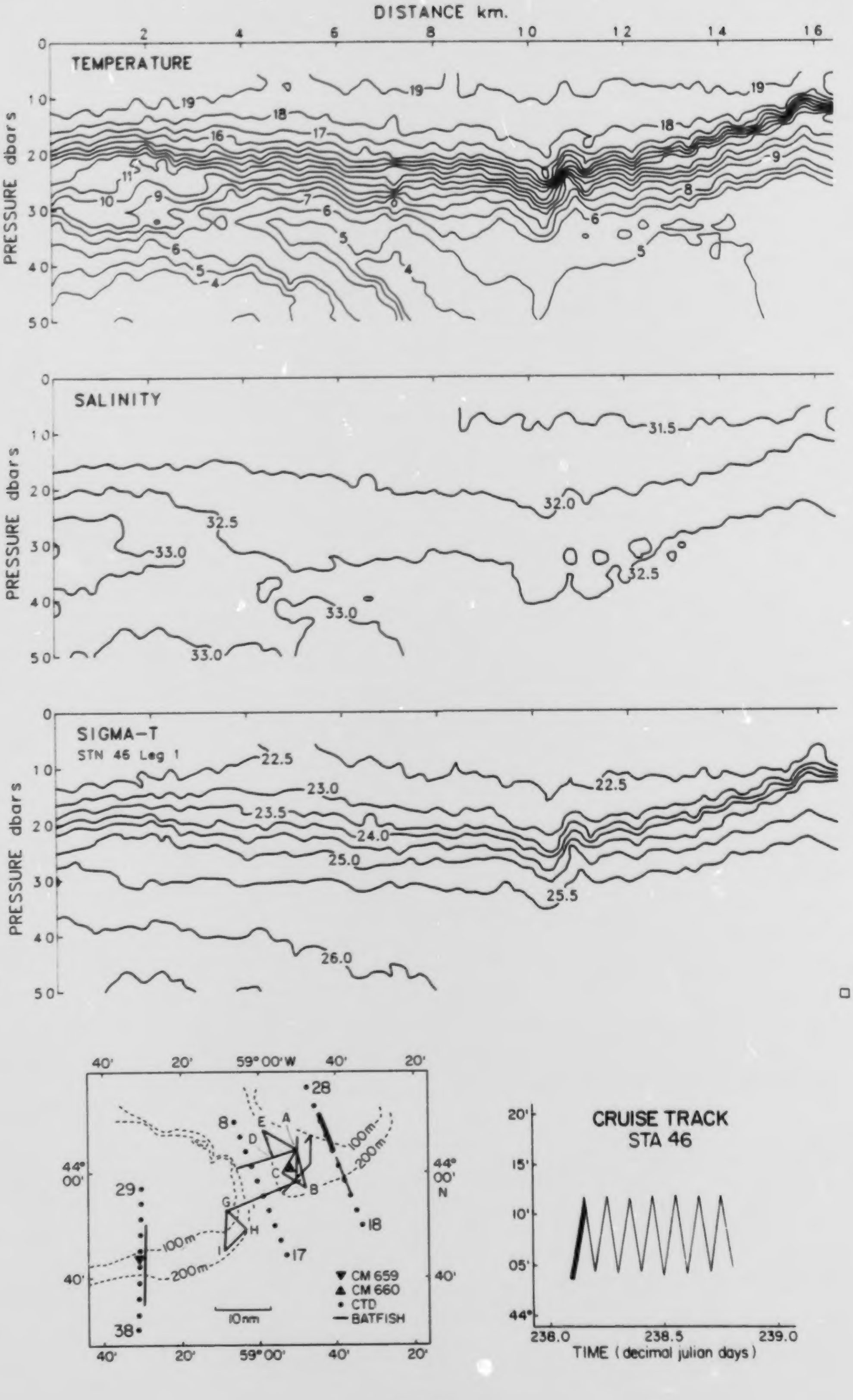

DISTANCE km.
TEMPERATURE
PRESSURE dbars
SALINITY
SIGMA-T
STN 46 Leg 1
CM 659
CM 660
CTD
BATFISH
10nm
59° 00' W
44° 00' N
CRUISE TRACK
STA 46
TIME (decimal julian days)

Fig. 93

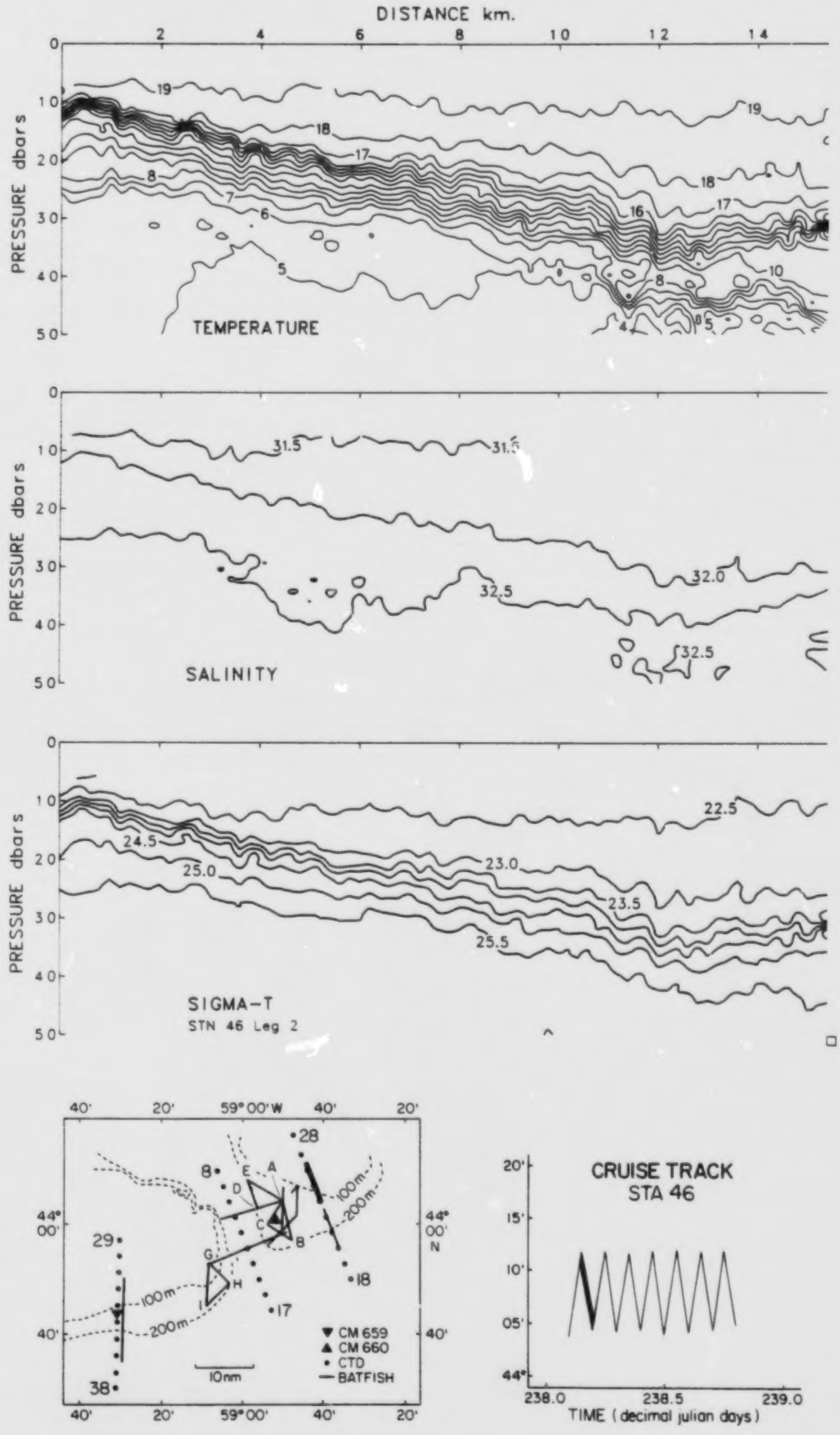

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 46 Leg 2
59°00'W
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 46
TIME (decimal julian days)
238.0
238.5
239.0

Fig. 94

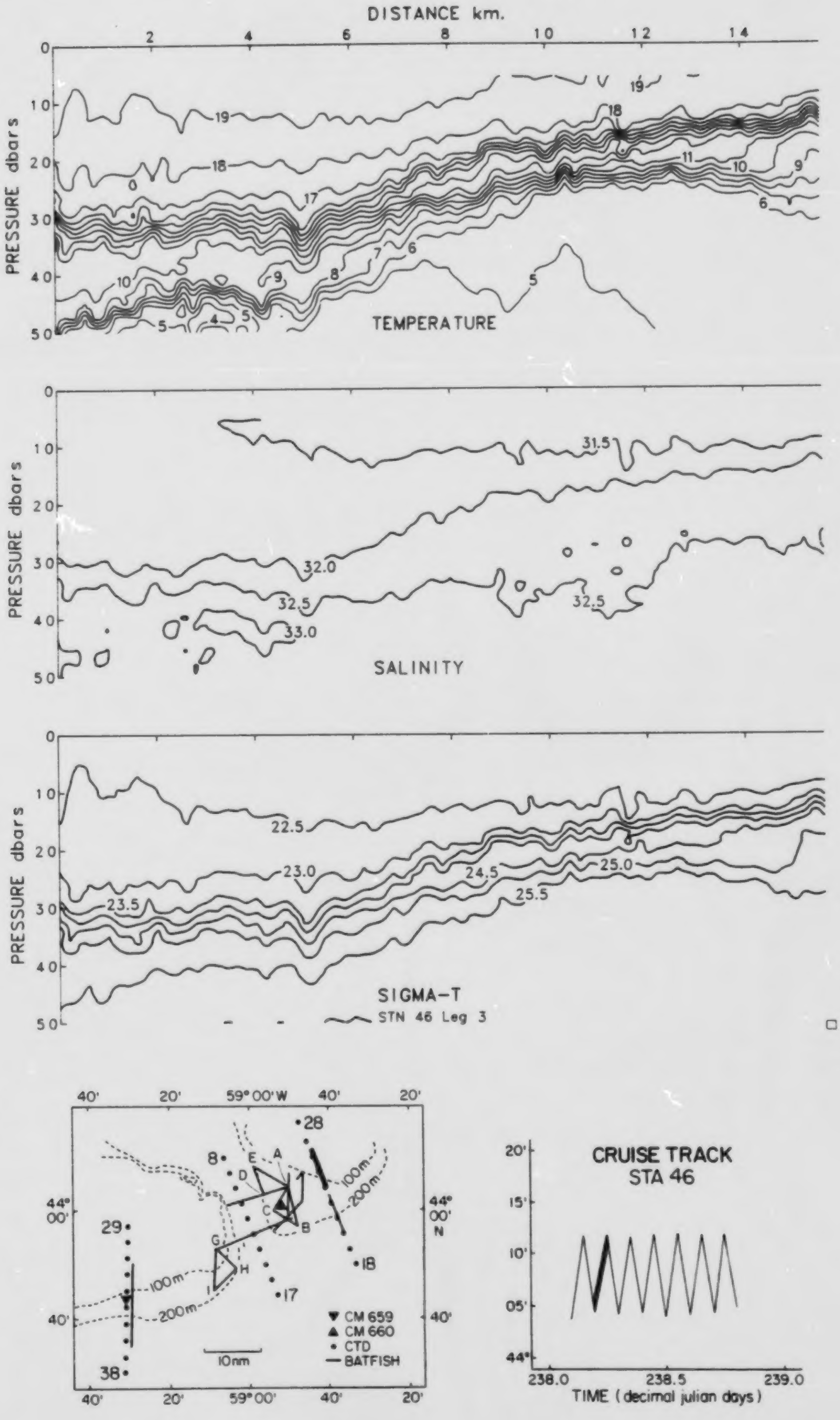
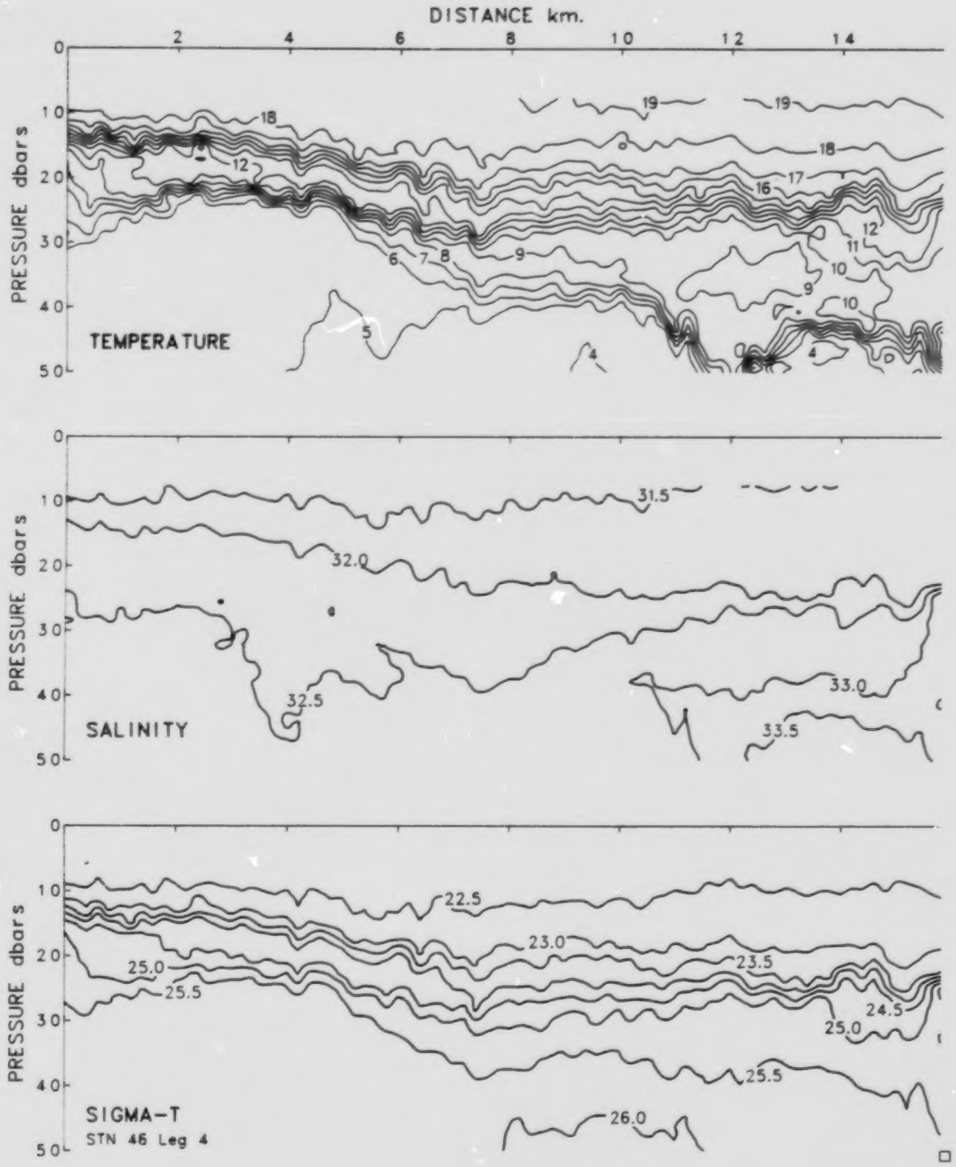

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 46 Leg 3
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
59°00'W
44° 00' N
40'
20'
CRUISE TRACK
STA 46
TIME (decimal julian days)
238.0
238.5
239.0

Fig. 95


DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 46 Leg 4

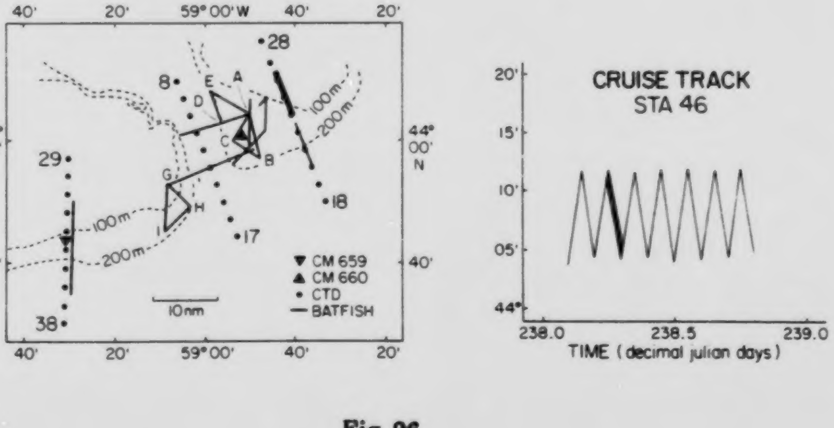

59° 00' W
44° 00'
44° 00' N
40'
20'
59° 00'
100m
200m
▼ CM 659
▲ CM 660
• CTD
— BATFISH
10nm
CRUISE TRACK
STA 46
TIME (decimal julian days)

Fig. 96

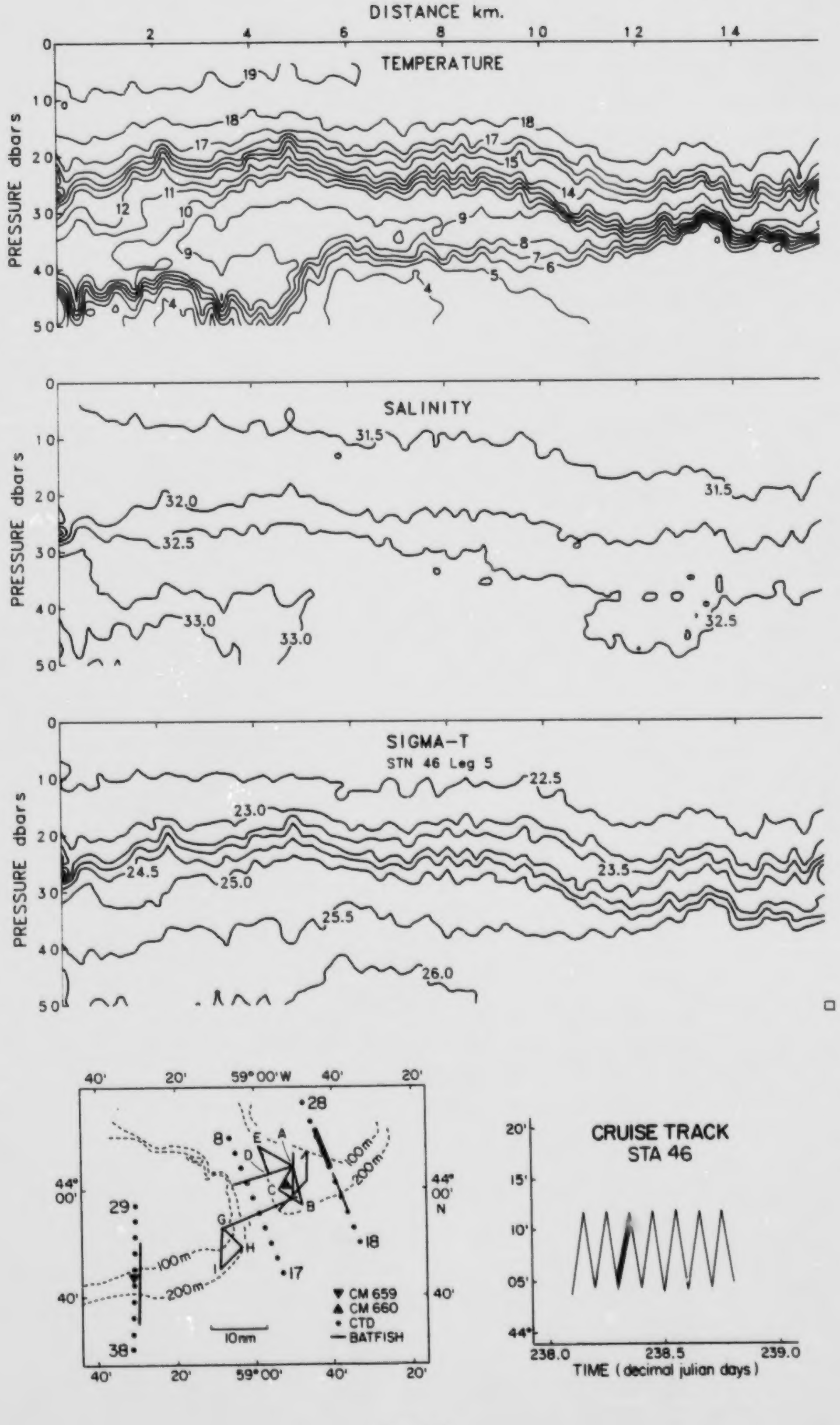
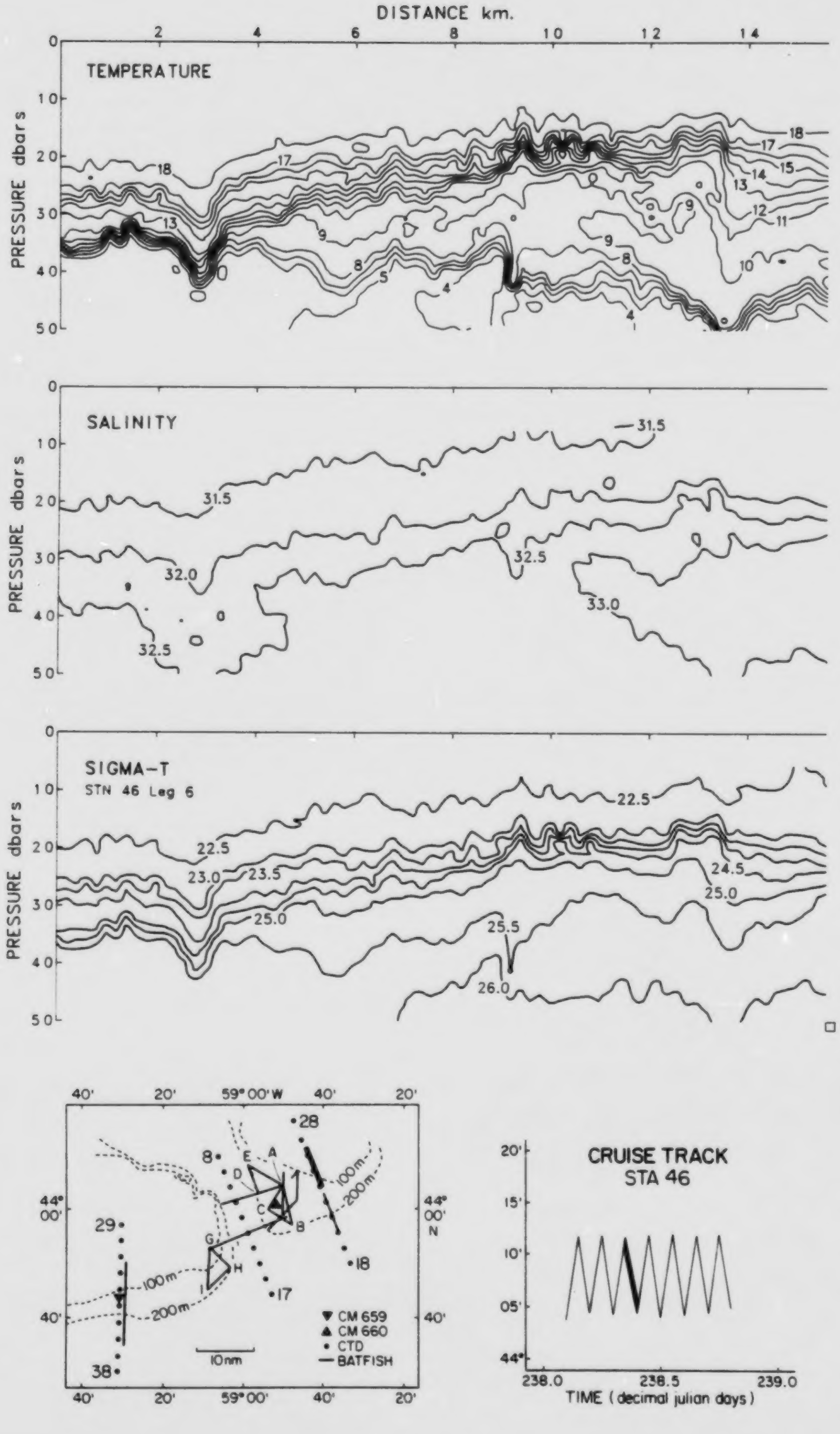

DISTANCE km.
TEMPERATURE
PRESSURE dbars
SALINITY
PRESSURE dbars
SIGMA-T
STN 46 Leg 5
PRESSURE dbars
59°00'W
44° 00' N
10nm
CM 659
CM 660
CTD
BATFISH
100m
200m
CRUISE TRACK
STA 46
TIME (decimal julian days)

Fig. 97



DISTANCE km.
TEMPERATURE
PRESSURE dbars
SALINITY
SIGMA-T
STN 46 Leg 6
CRUISE TRACK
STA 46
59° 00' W
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
TIME (decimal julian days)

Fig. 98

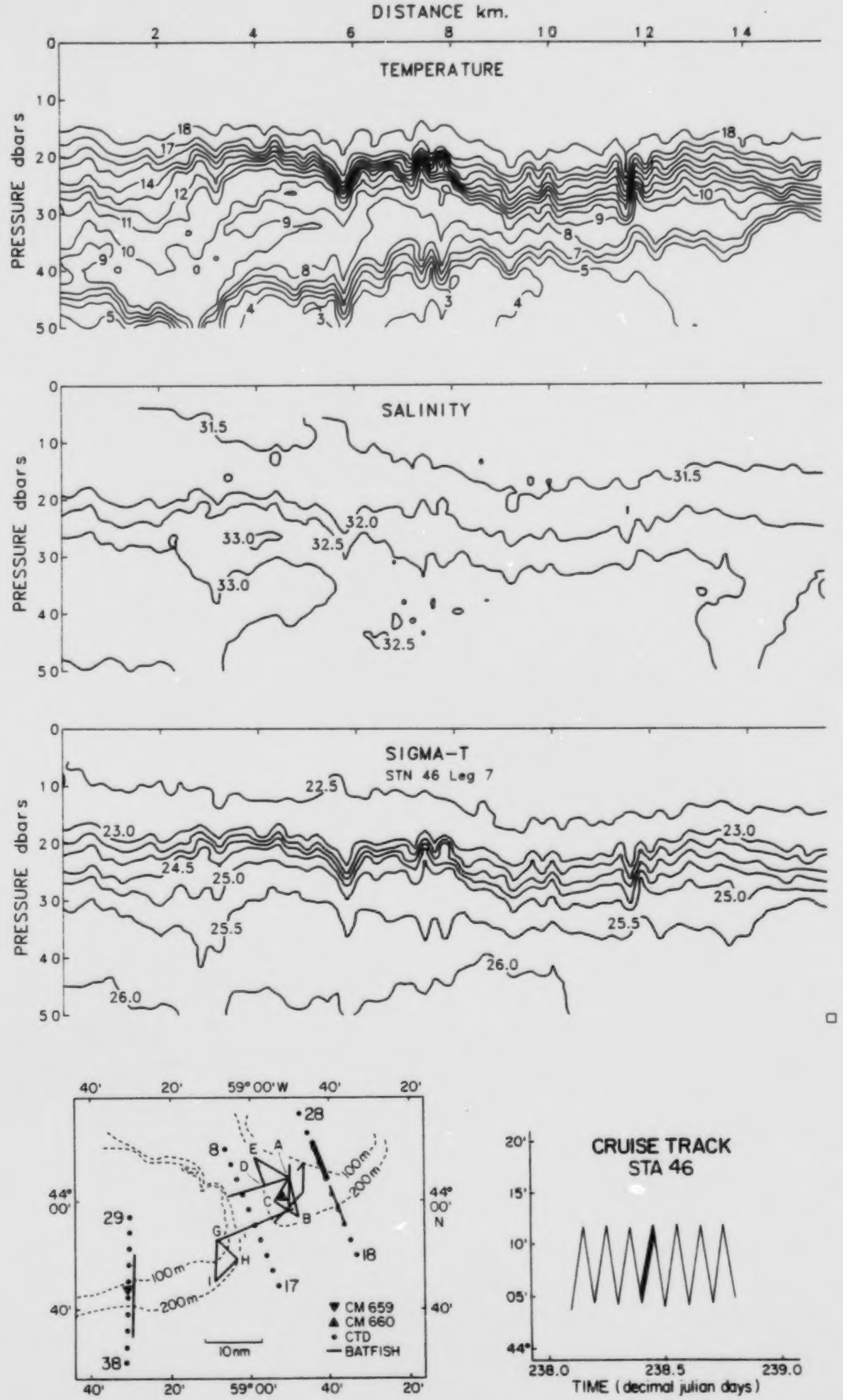

DISTANCE km.
TEMPERATURE
PRESSURE dbars
SALINITY
SIGMA-T
STN 46 Leg 7
CRUISE TRACK
STA 46
TIME (decimal julian days)
59°00'W
44°
00'
N
100m
200m
CM 659
CM 660
CTD
BATFISH
10nm

Fig. 99

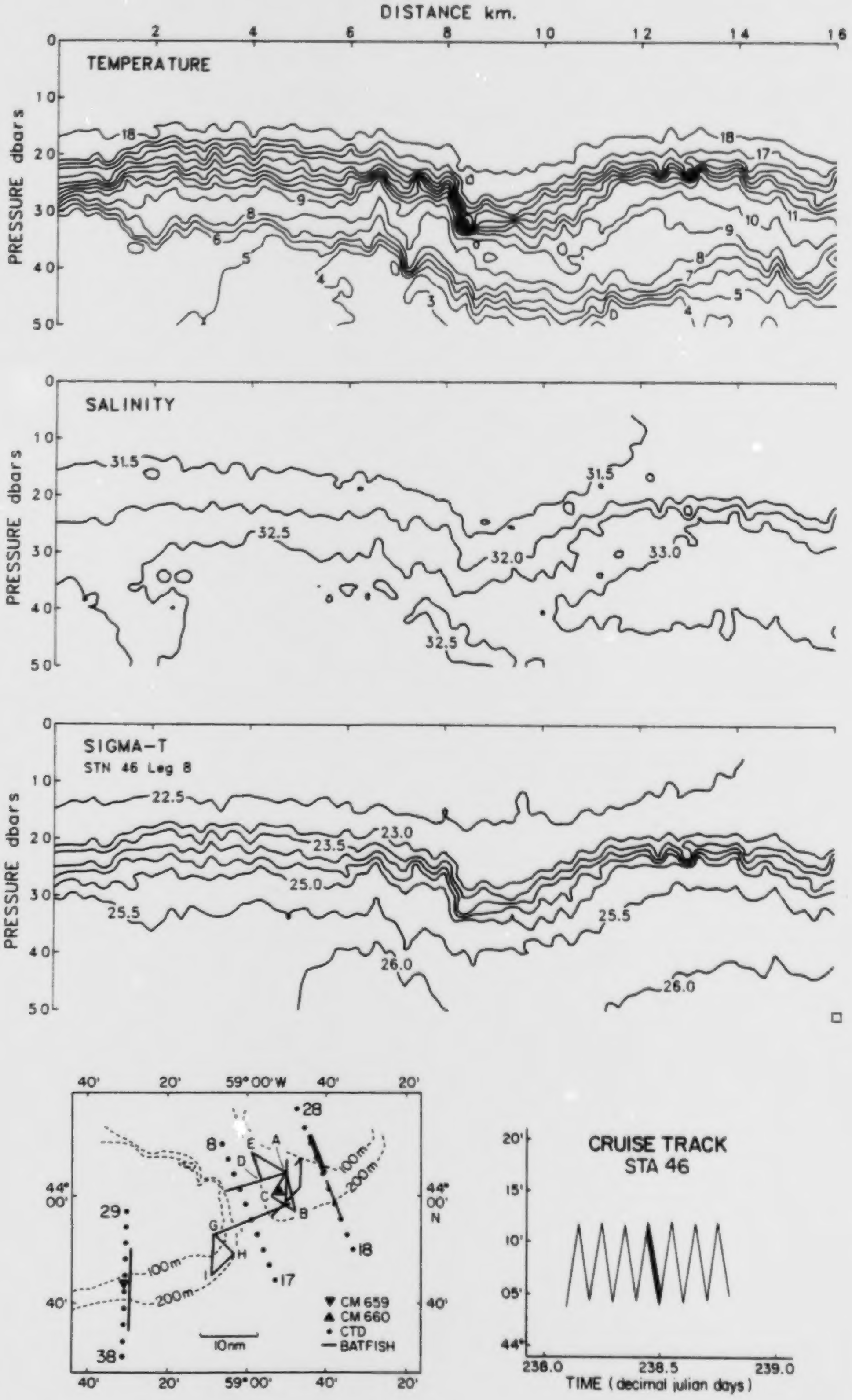
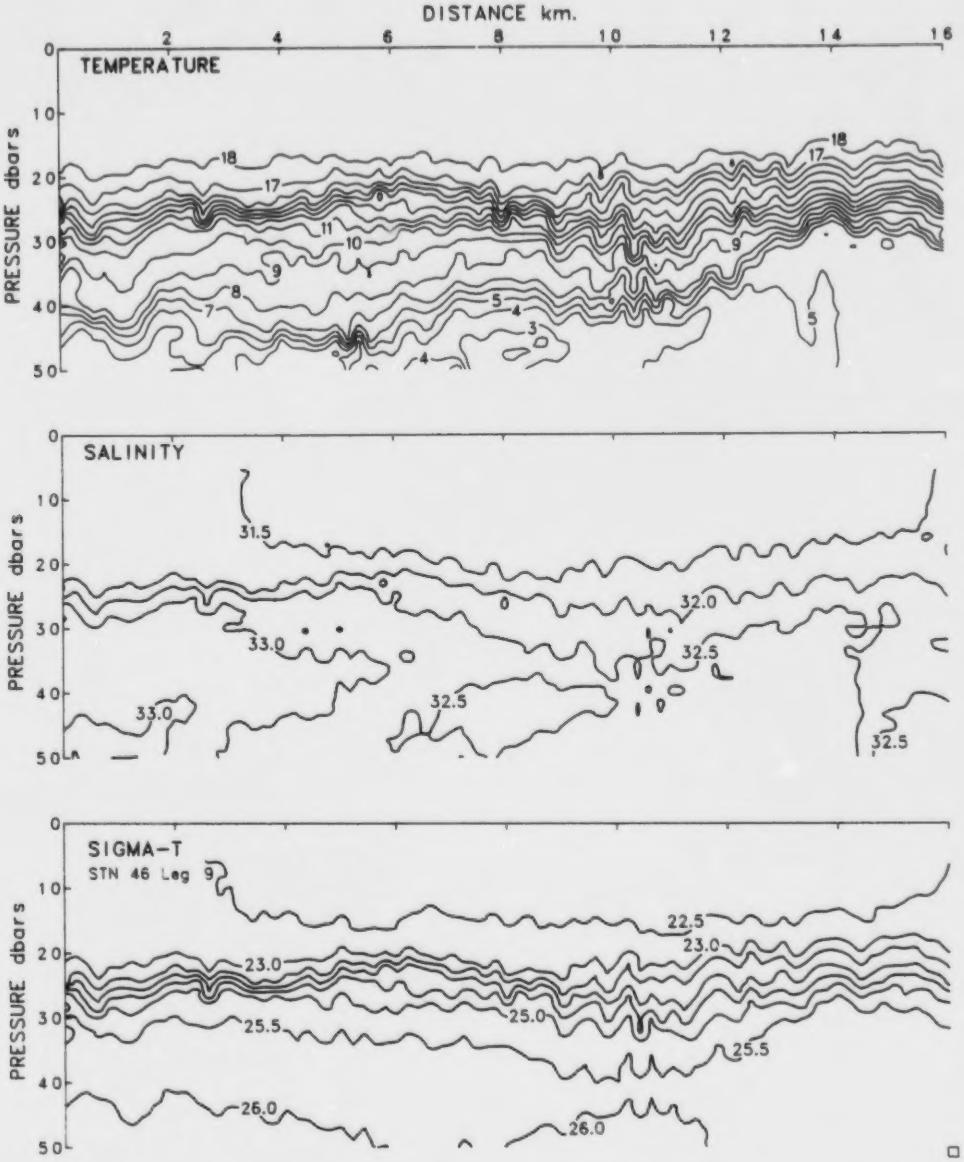
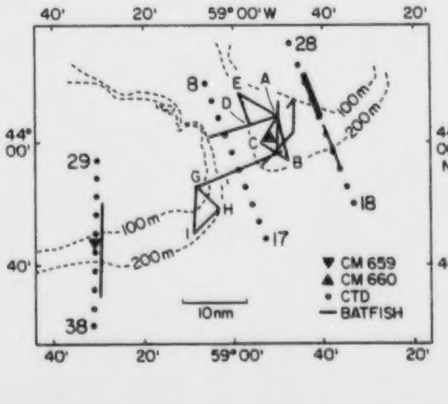

DISTANCE km.
TEMPERATURE
SALINITY
SIGMA-T
STN 46 Leg 8
PRESSURE dbars
CRUISE TRACK
STA 46
TIME (decimal julian days)
59°00'W
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m

Fig. 100


DISTANCE km.
TEMPERATURE
PRESSURE dbars
SALINITY
PRESSURE dbars
SIGMA-T
STN 46 Leg 9
PRESSURE dbars


59° 00' W
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm

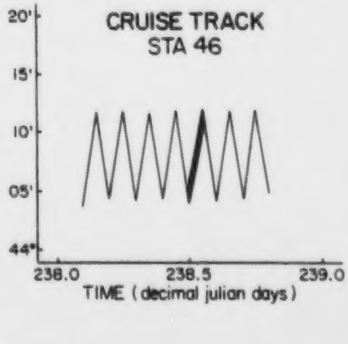

CRUISE TRACK
STA 46
TIME (decimal julian days)

Fig. 101

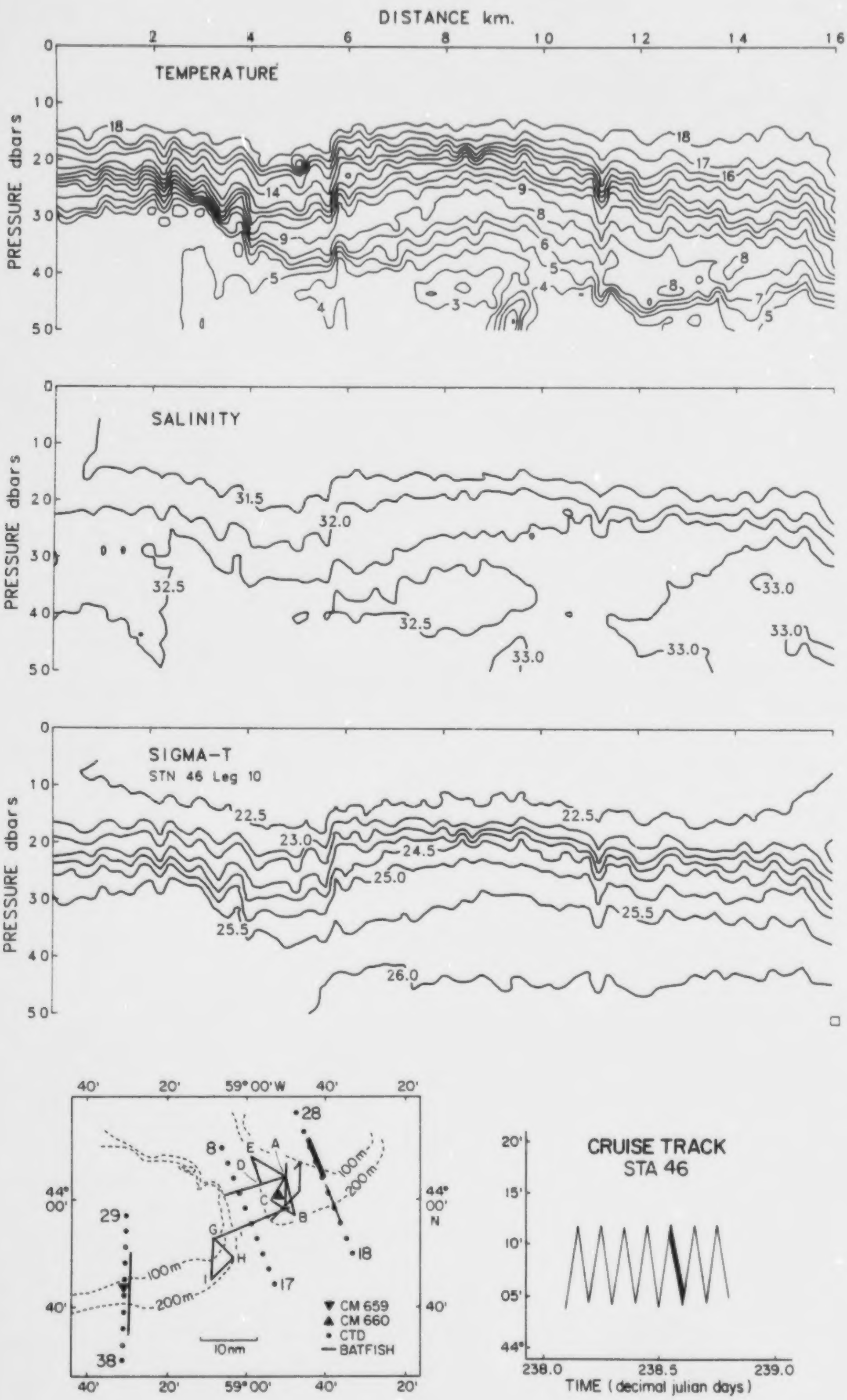
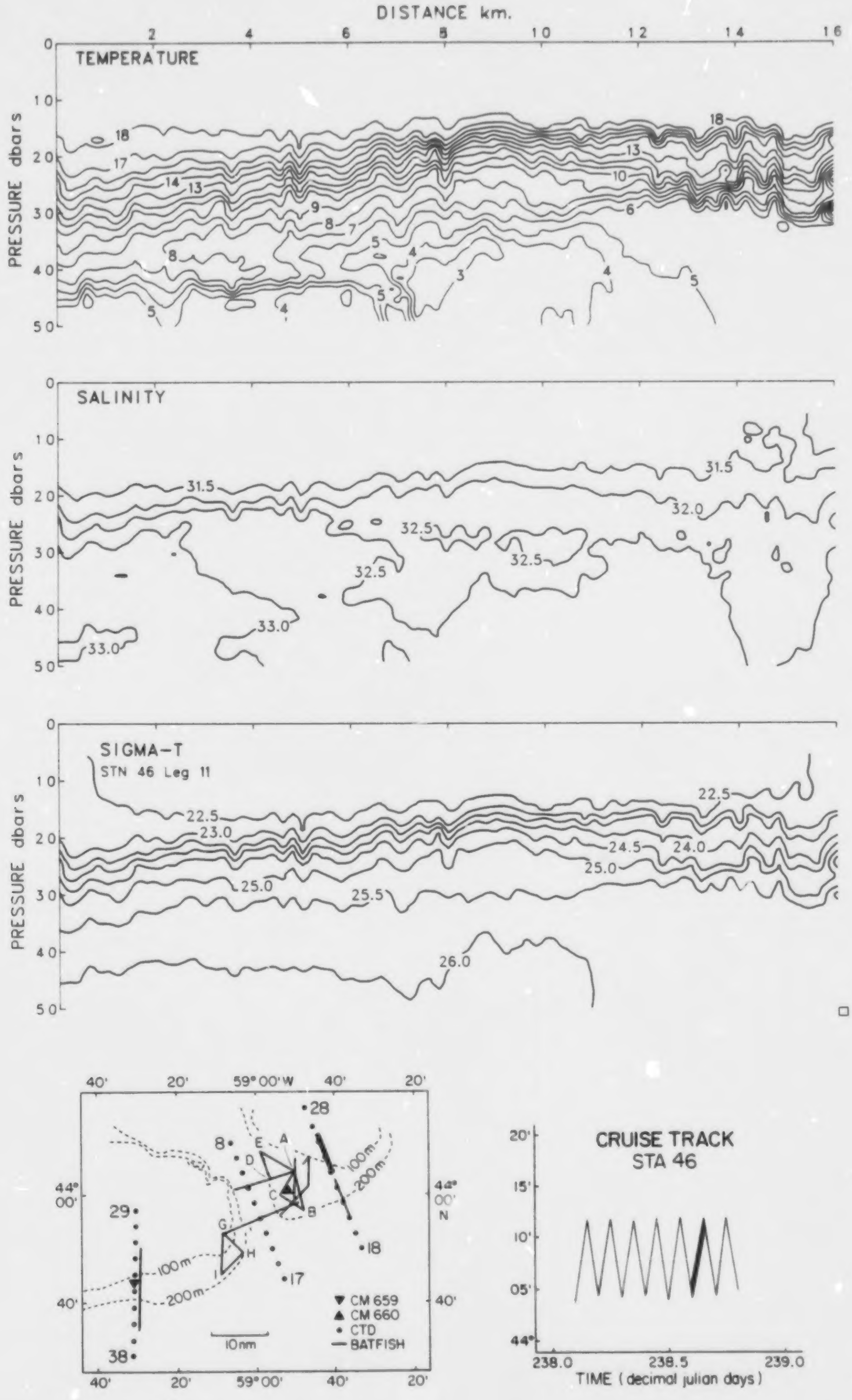

DISTANCE km.
TEMPERATURE
PRESSURE dbars
SALINITY
SIGMA-T
STN 46 Leg 10
CRUISE TRACK
STA 46
TIME (decimal julian days)
CM 659
CM 660
CTD
BATFISH
59° 00' W
44° 00' N
10nm
100m
200m

Fig. 102



DISTANCE km.
TEMPERATURE
PRESSURE dbars
SALINITY
SIGMA-T
STN 46 Leg 11
22.5
23.0
24.5
24.0
25.0
25.5
26.0
31.5
32.0
32.5
33.0
59° 00' W
44° 00'
44° 00' N
40'
20'
100m
200m
CM 659
CM 660
CTD
BATFISH
10nm
CRUISE TRACK
STA 46
TIME (decimal julian days)
238.0
238.5
239.0

Fig. 103

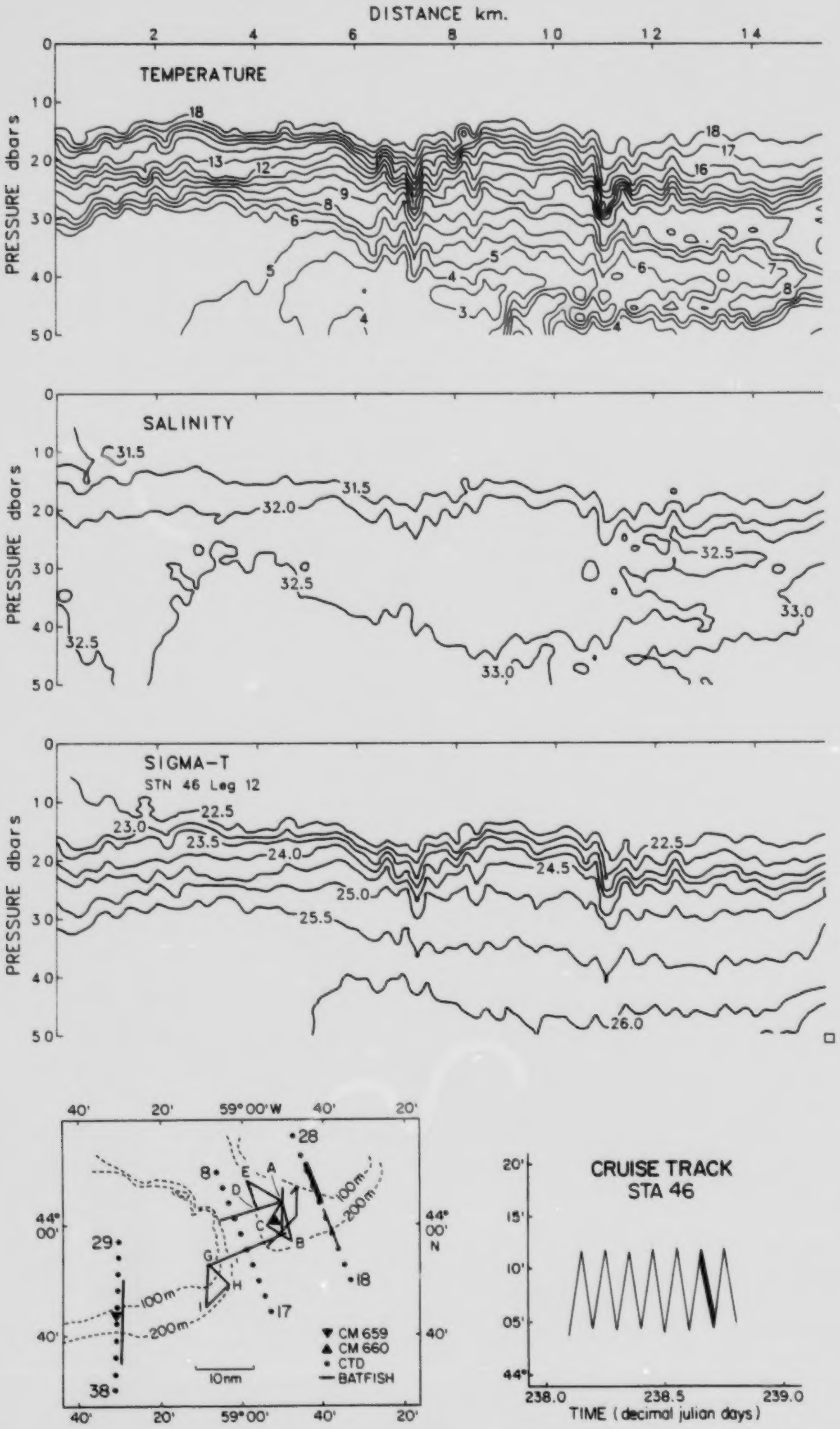

DISTANCE km.
TEMPERATURE
PRESSURE dbars
SALINITY
PRESSURE dbars
SIGMA-T
STN 46 Leg 12
PRESSURE dbars
CM 659
CM 660
CTD
BATFISH
10nm
59°00'W
44° 00' N
CRUISE TRACK
STA 46
TIME (decimal julian days)

Fig. 104

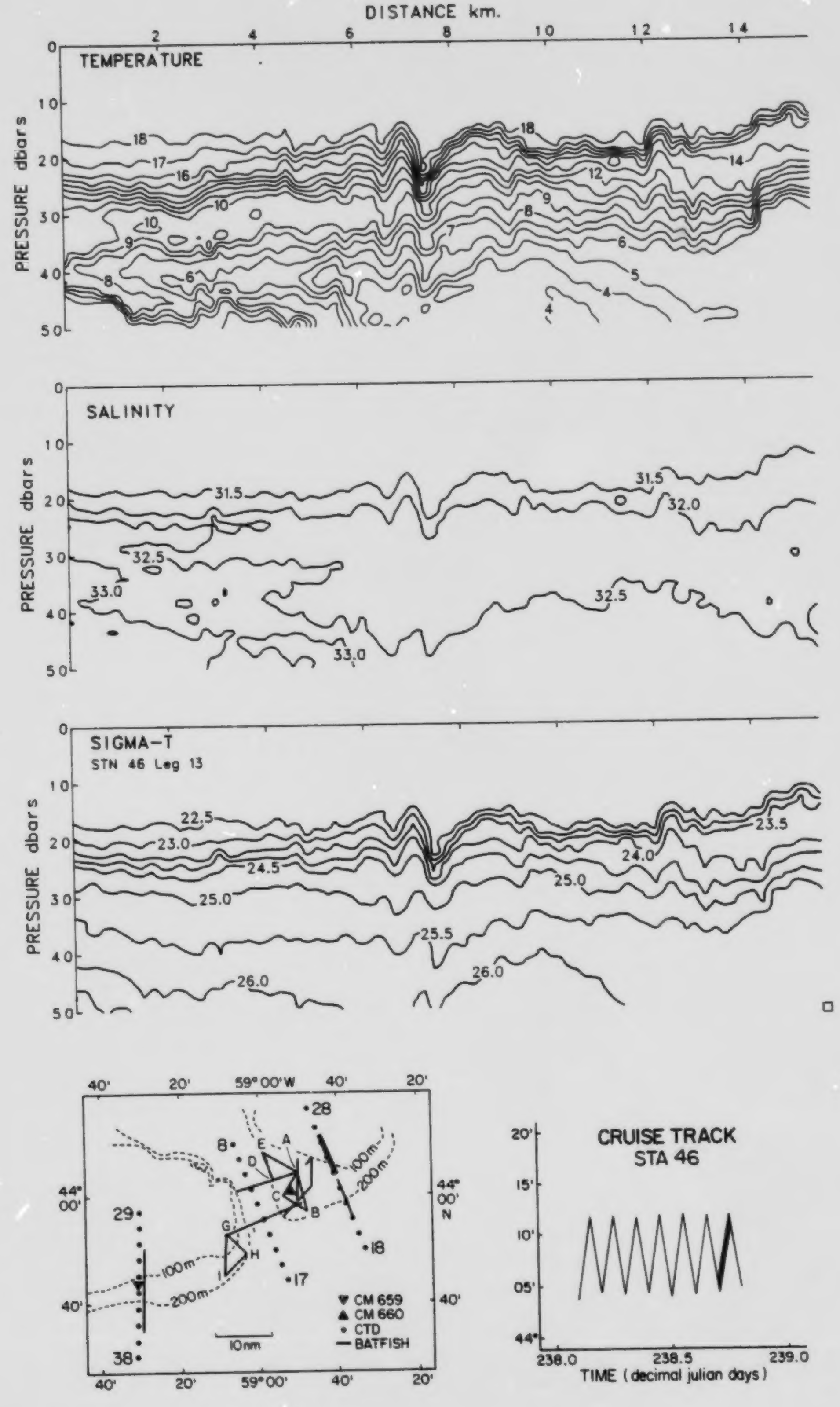

DISTANCE km.
TEMPERATURE
PRESSURE dbars
SALINITY
SIGMA-T
STN 46 Leg 13
CM 659
CM 660
CTD
BATFISH
10nm
59° 00' W
44° 00' N
CRUISE TRACK
STA 46
TIME (decimal julian days)

Fig. 105

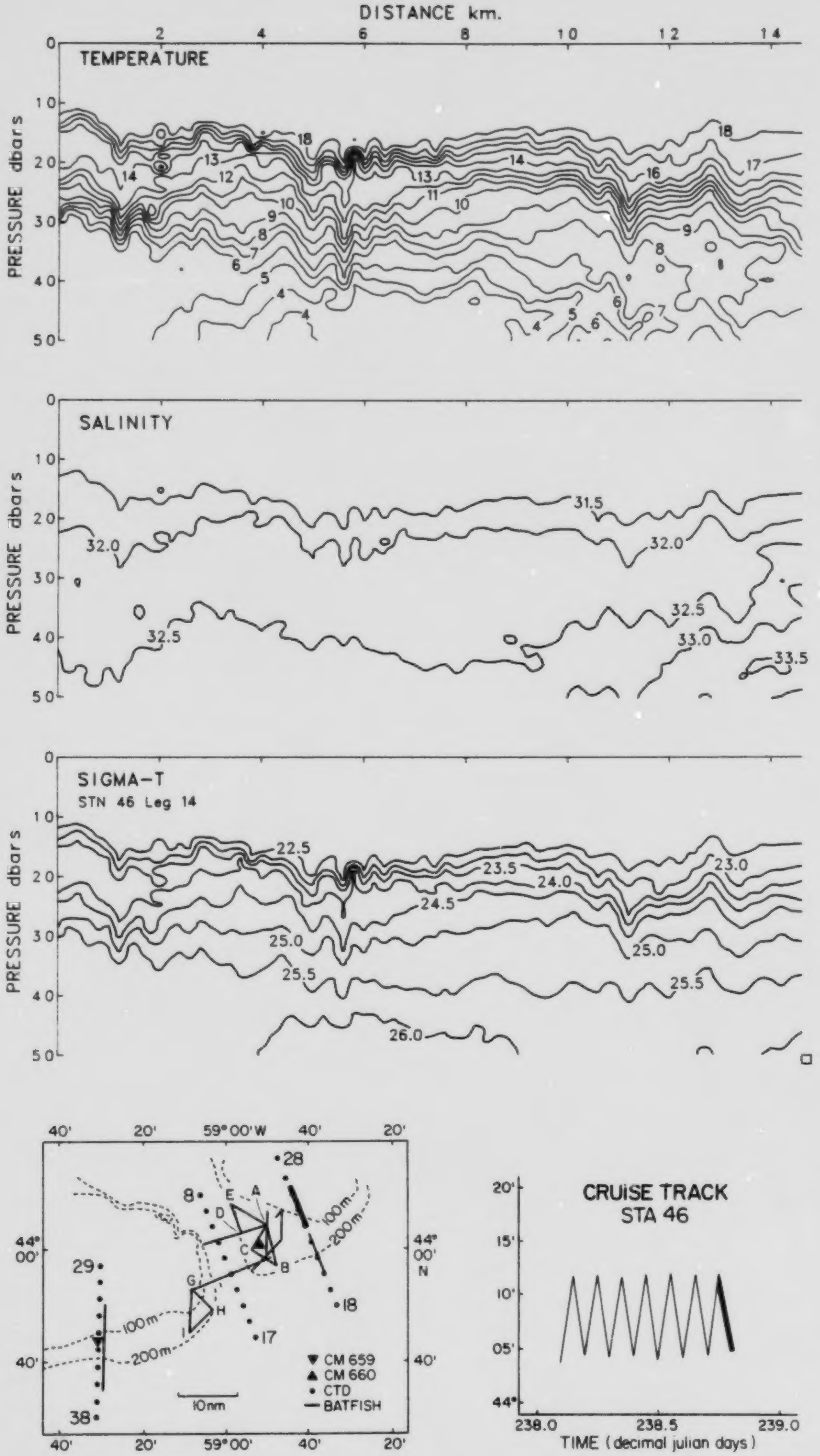
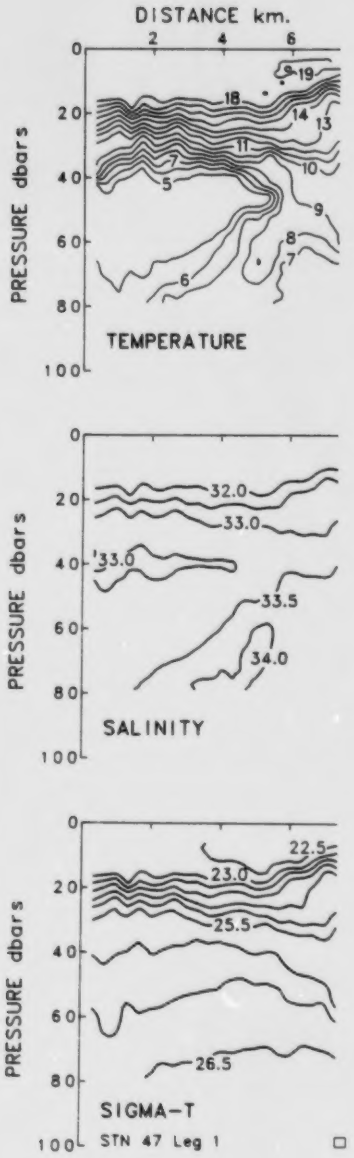
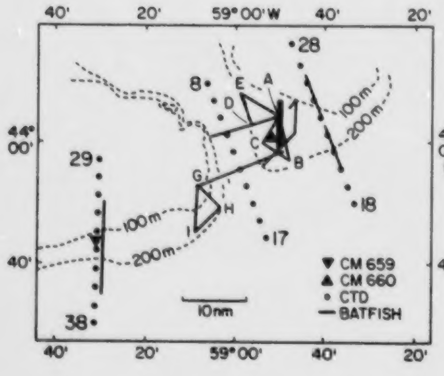

DISTANCE km.
TEMPERATURE
PRESSURE dbars
SALINITY
PRESSURE dbars
SIGMA-T
STN 46 Leg 14
PRESSURE dbars
59°00'W
44°
00'
N
CM 659
CM 660
CTD
BATFISH
10nm
59°00'
CRUISE TRACK
STA 46
TIME (decimal julian days)

Fig. 106

Figures 107-120.

BATFISH station 47: 14 sections of Temperature, Salinity and Sigma-t vs. pressure, location maps and latitude vs. time plot.


DISTANCE km.
2
4
6
0
20
40
60
80
100
PRESSURE dbars
19
18
14
13
11
10
7
5
9
8
7
6
TEMPERATURE
0
20
40
60
80
100
PRESSURE dbars
32.0
33.0
33.0
33.5
34.0
SALINITY
0
20
40
60
80
100
PRESSURE dbars
22.5
23.0
25.5
26.5
SIGMA-T
STN 47 Leg 1


40'
20'
59°00'W
40'
20'
44° 00'
44° 00' N
40'
40'
28
8
E
A
D
C
B
29
G
H
I
17
18
38
100m
200m
10nm
▼ CM 659
▲ CM 660
• CTD
— BATFISH
40'
20'
59°00'
40'
20'

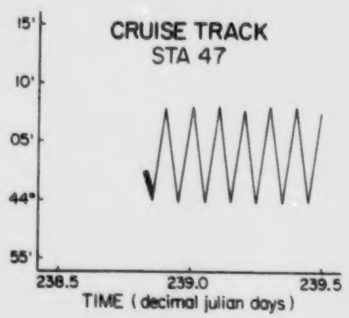

CRUISE TRACK
STA 47
15'
10'
05'
44°
55'
238.5
239.0
239.5
TIME (decimal julian days)

Fig. 107

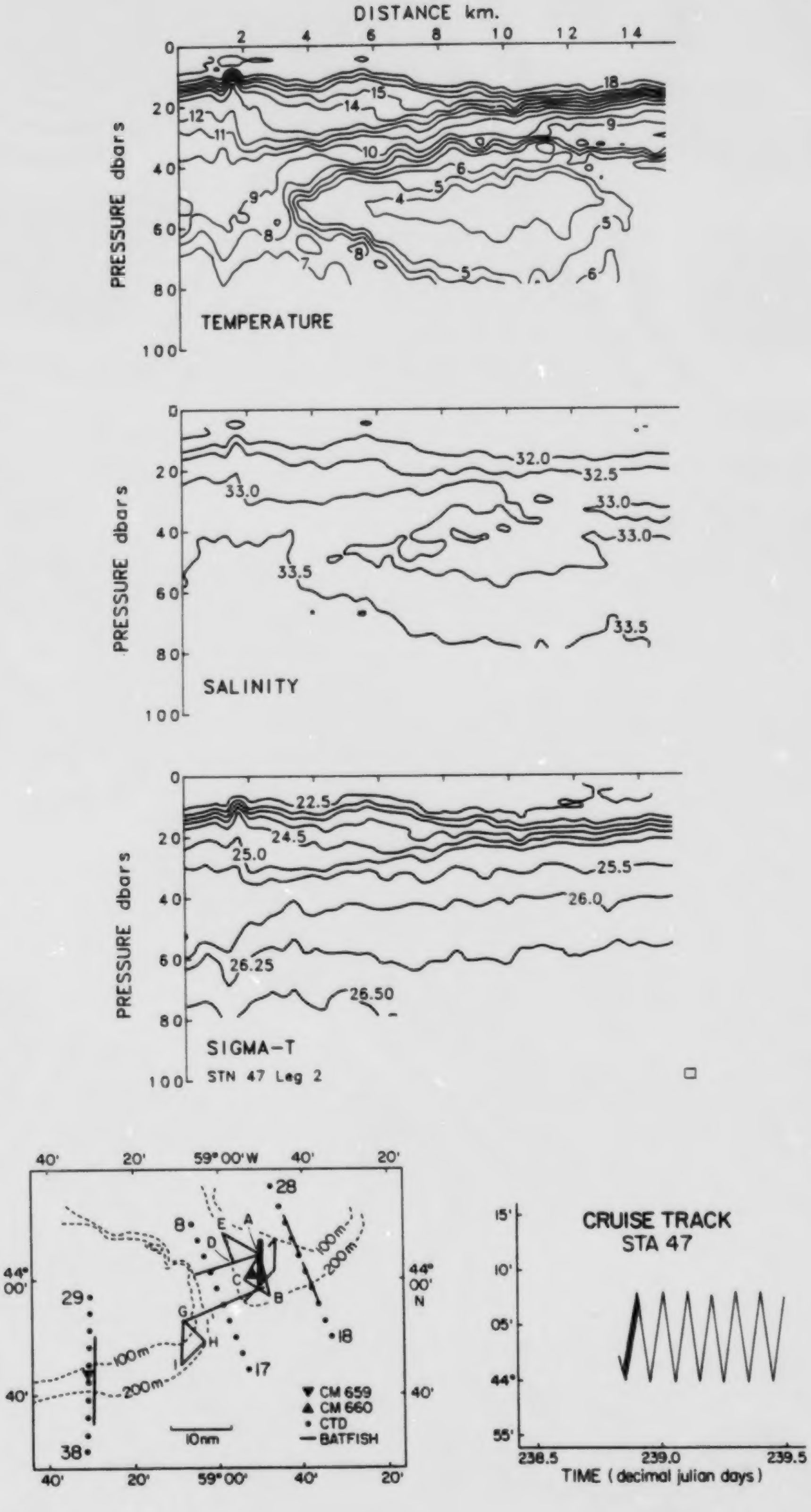

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 47 Leg 2
59° 00' W
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
CRUISE TRACK
STA 47
TIME (decimal julian days)

Fig. 108

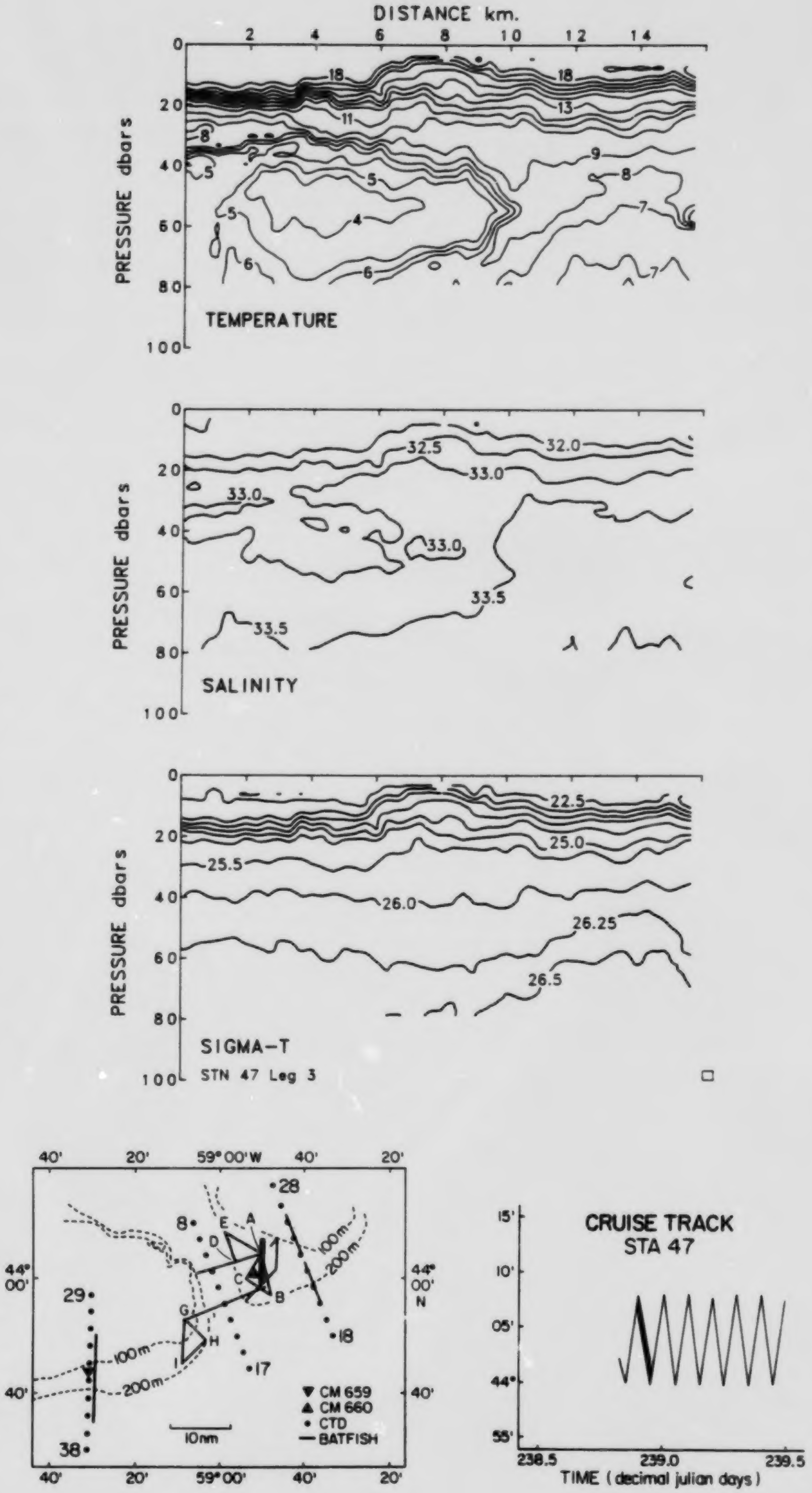
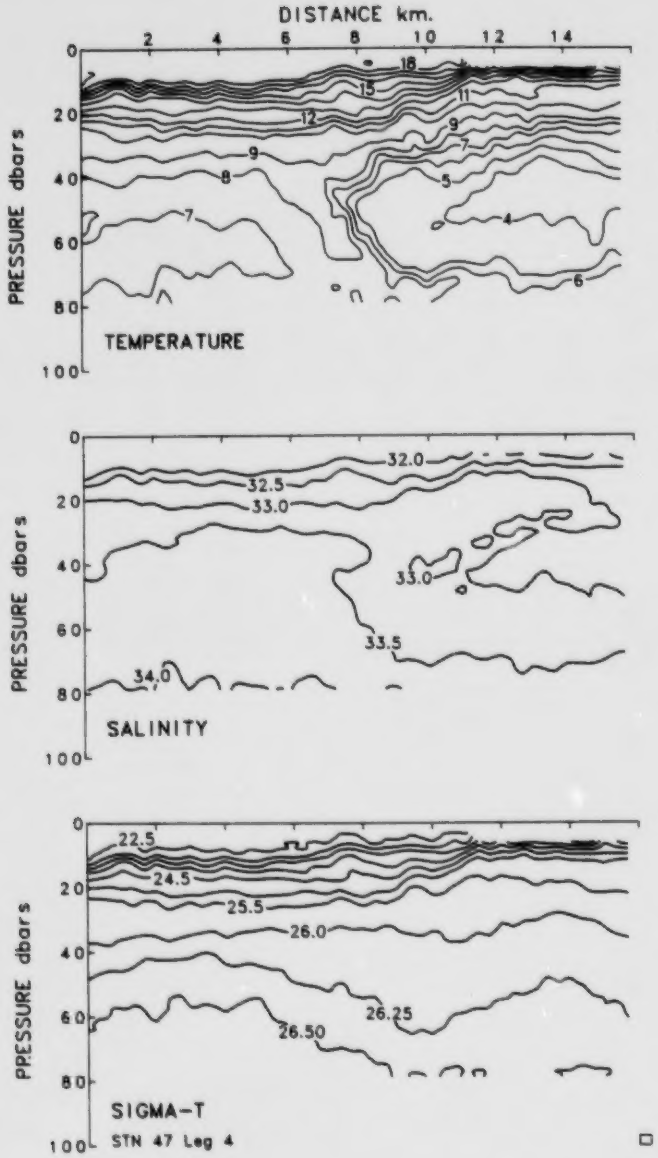

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 47 Leg 3
59°00'W
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 47
TIME (decimal julian days)

Fig. 109


DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 47 Leg 4

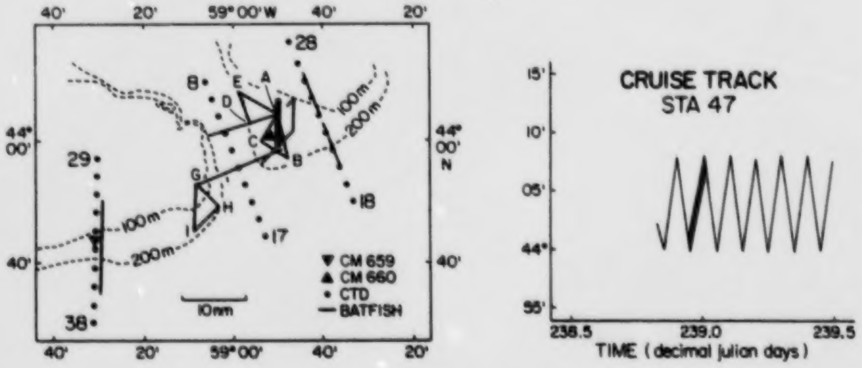

59° 00'W
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 47
TIME (decimal julian days)

Fig. 110

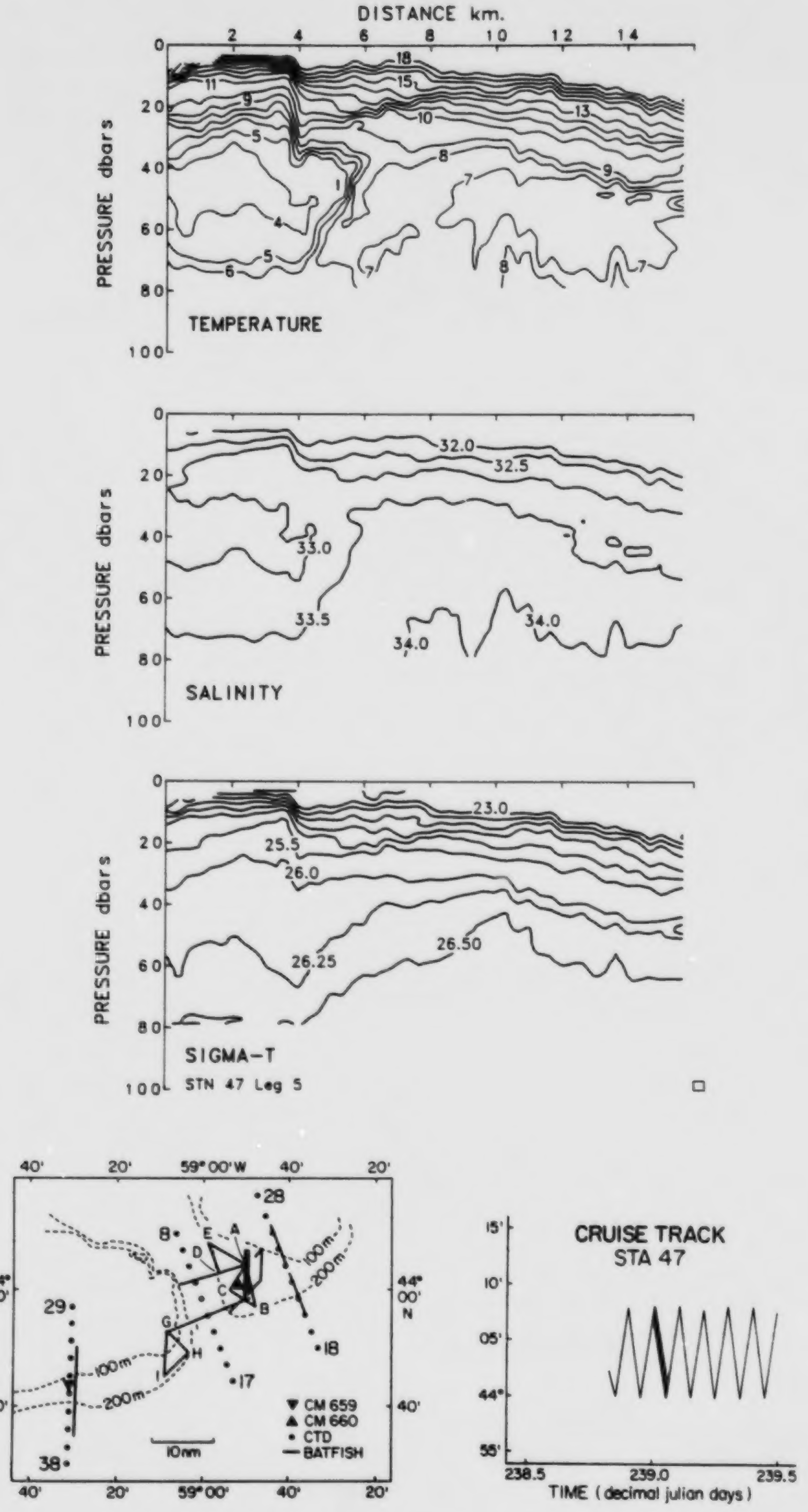

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 47 Leg 5
59° 00'W
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 47
TIME (decimal julian days)

Fig. 111

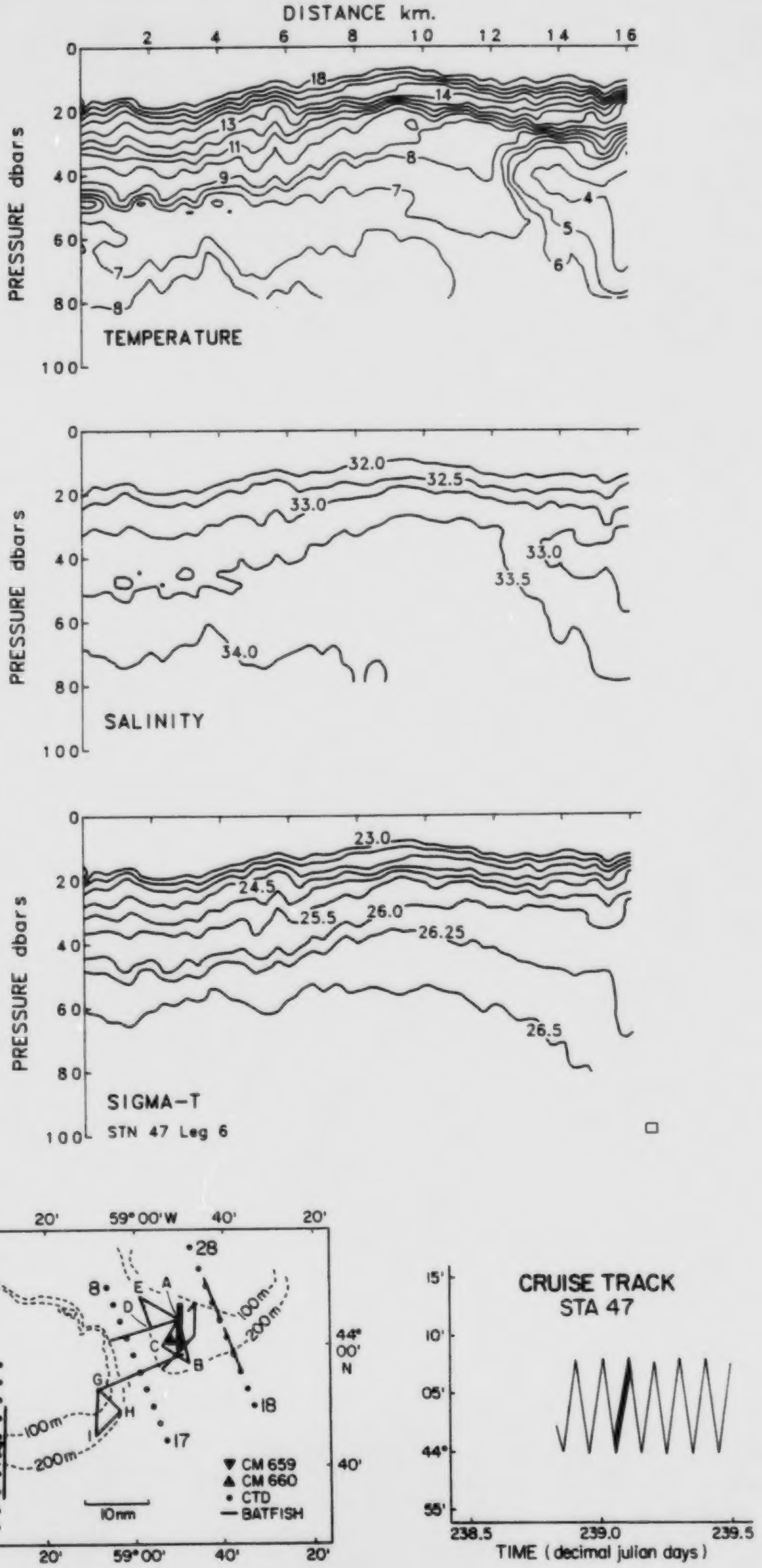
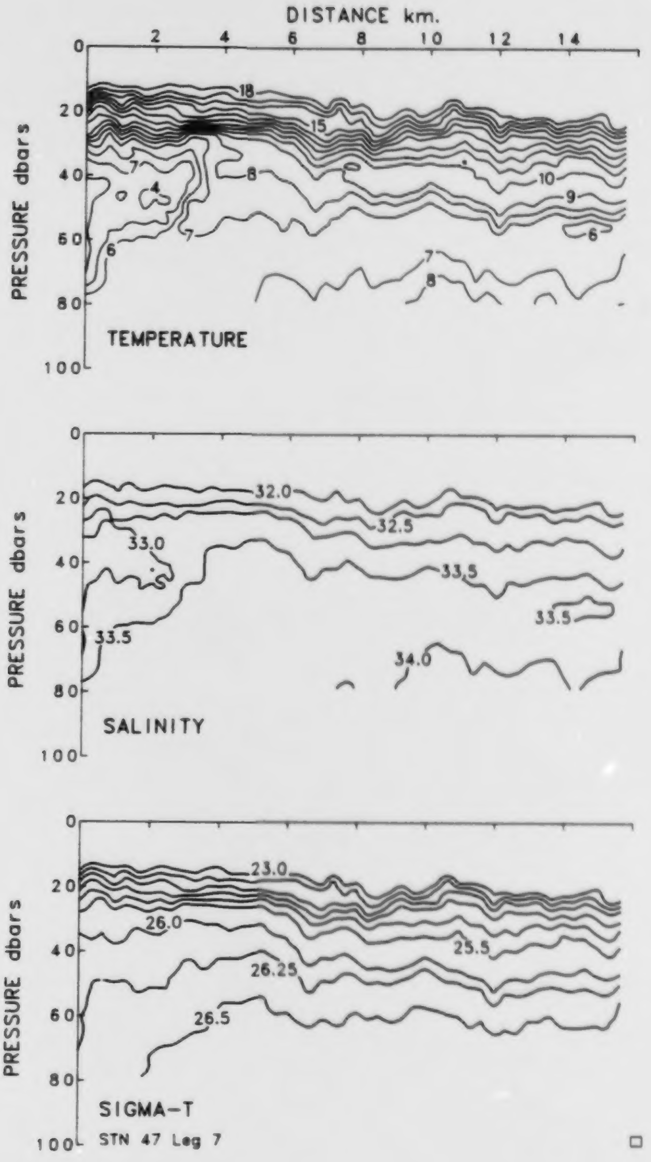
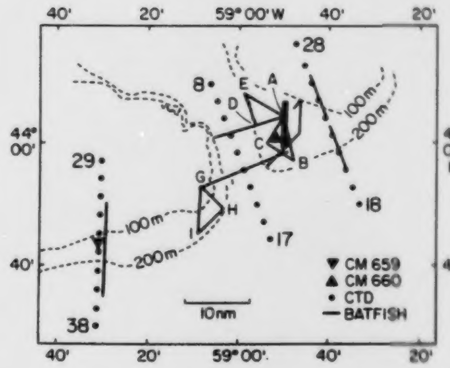

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 47 Leg 6
CRUISE TRACK
STA 47
TIME (decimal julian days)
CM 659
CM 660
CTD
BATFISH
10nm

Fig. 112


DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 47 Leg 7


59°00'W
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm

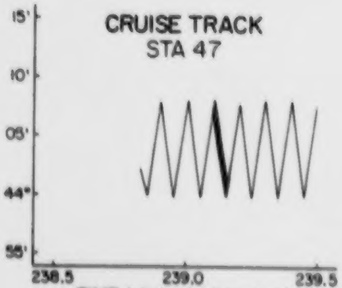

CRUISE TRACK
STA 47
TIME (decimal julian days)

Fig. 113

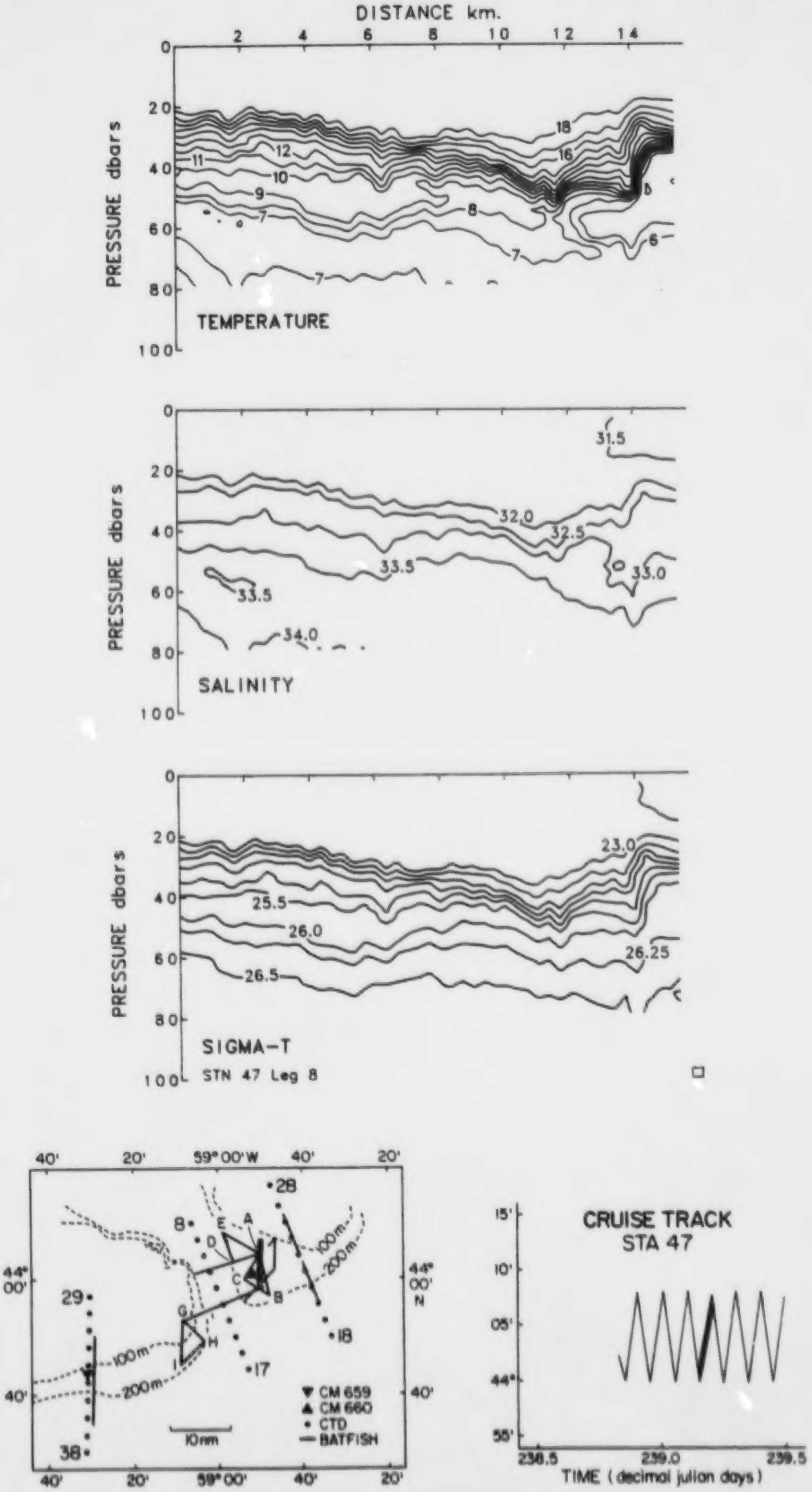

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 47 Leg 8
CRUISE TRACK
STA 47
TIME (decimal julian days)
▼ CM 659
▲ CM 660
• CTD
— BATFISH
10nm
59° 00' W
44° 00'
44° 00' N

Fig. 114

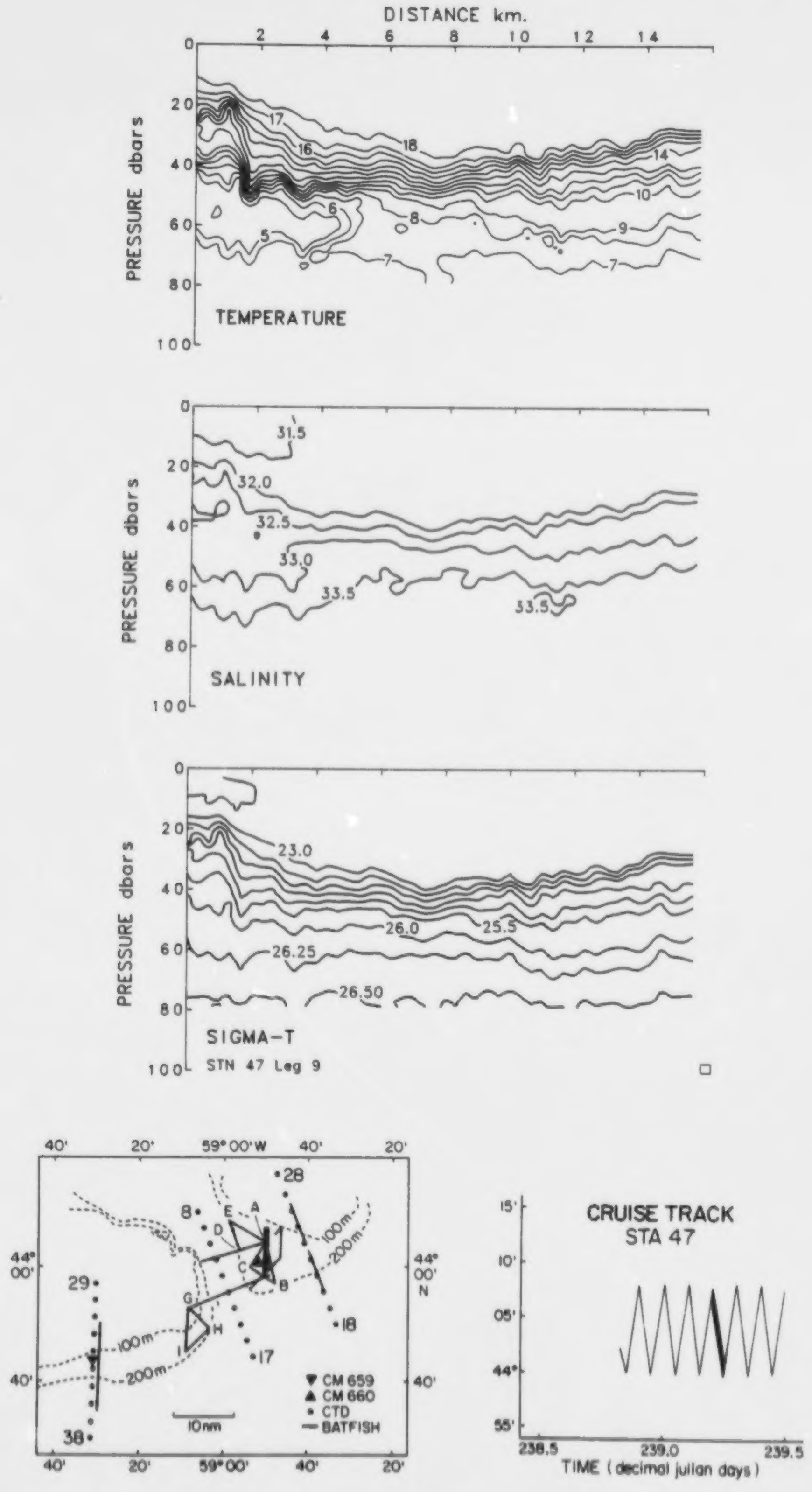

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 47 Leg 9
CM 659
CM 660
CTD
BATFISH
10nm
59° 00' W
44° 00' N
CRUISE TRACK
STA 47
TIME (decimal julian days)

Fig. 115

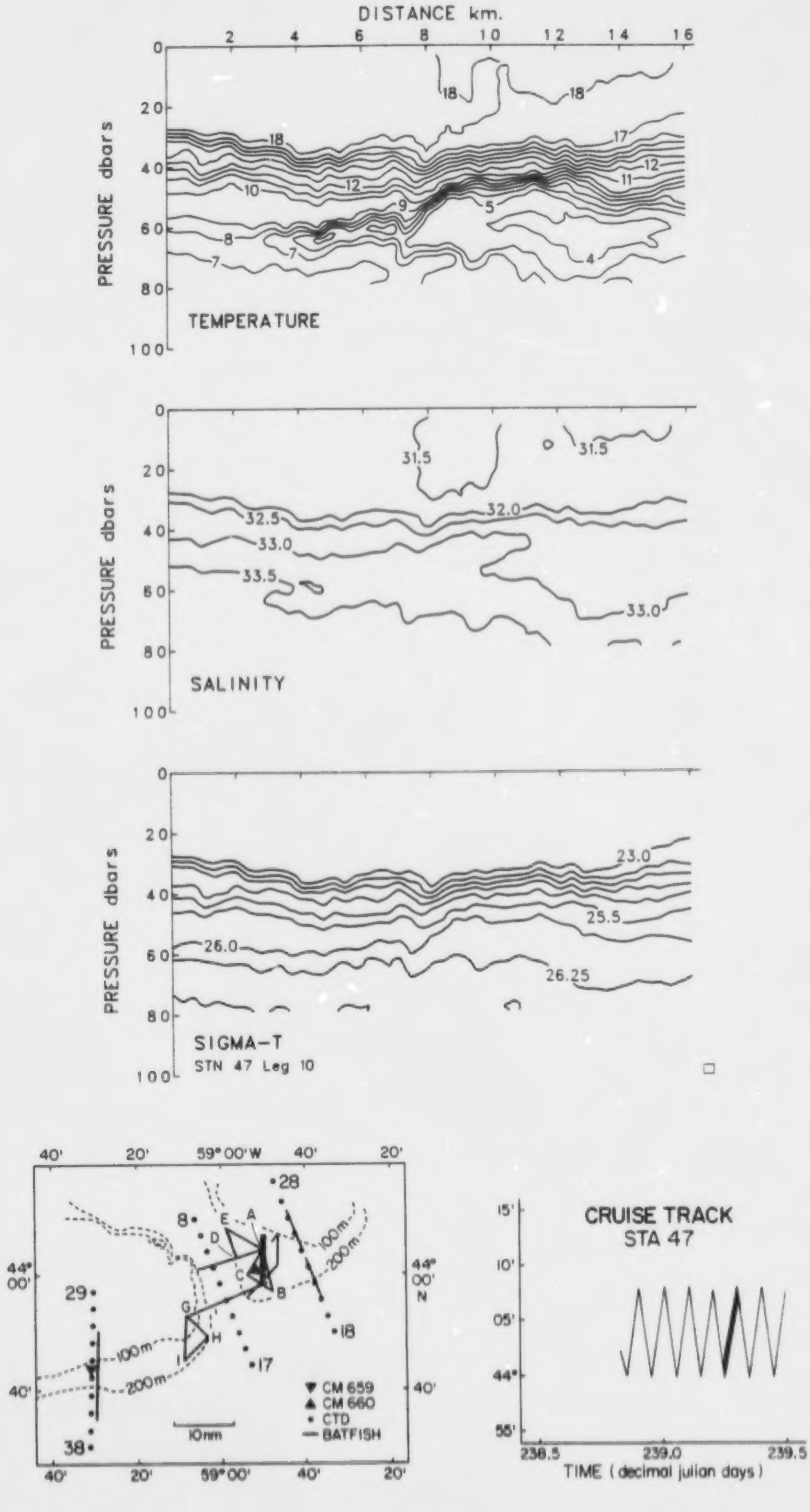

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 47 Leg 10
59°00'W
44° 00' N
▼ CM 659
▲ CM 660
• CTD
— BATFISH
10nm
100m
200m
CRUISE TRACK
STA 47
TIME (decimal julian days)

Fig. 116

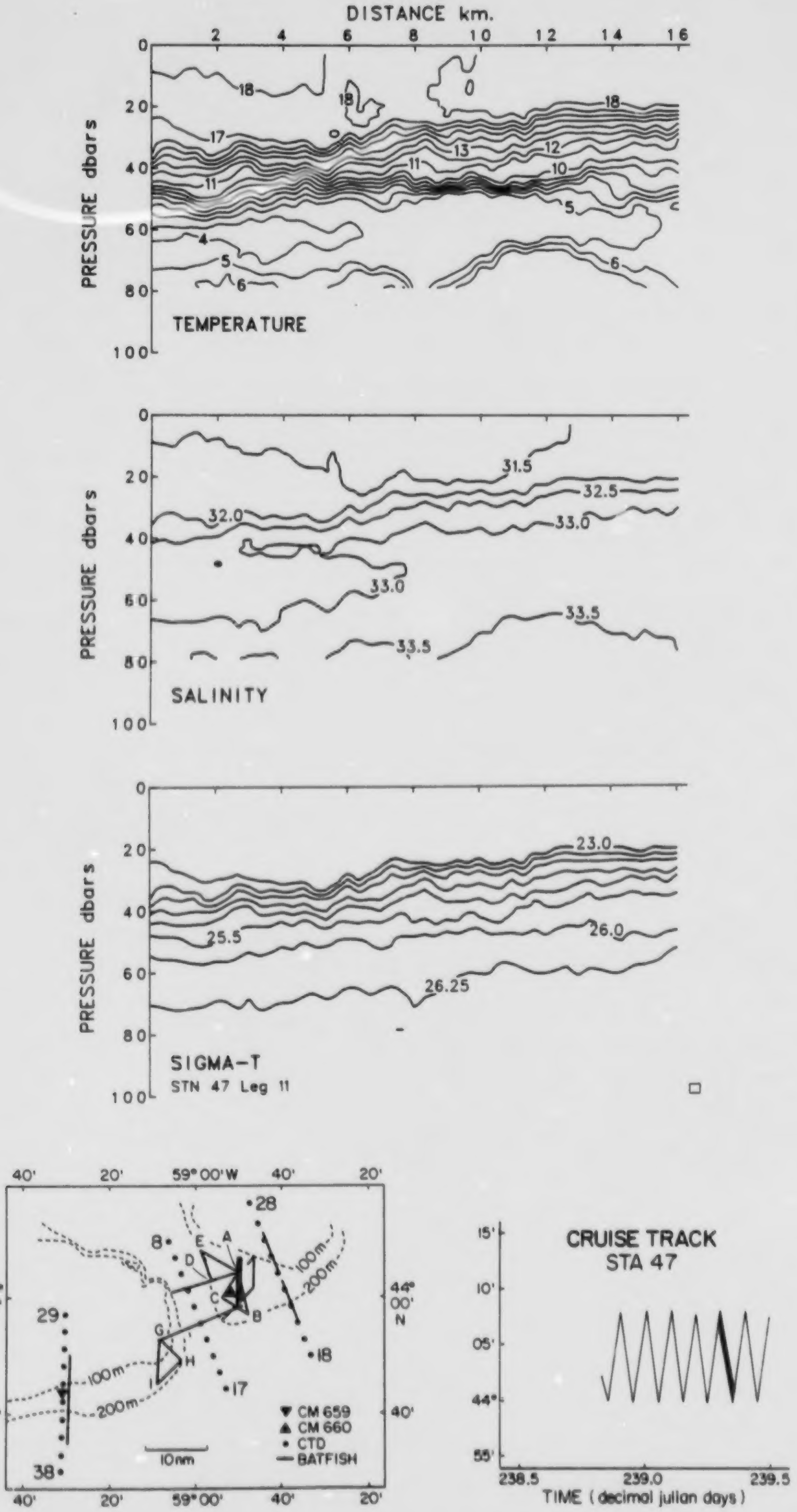

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 47 Leg 11
59° 00'W
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
CRUISE TRACK
STA 47
TIME (decimal julian days)

Fig. 117

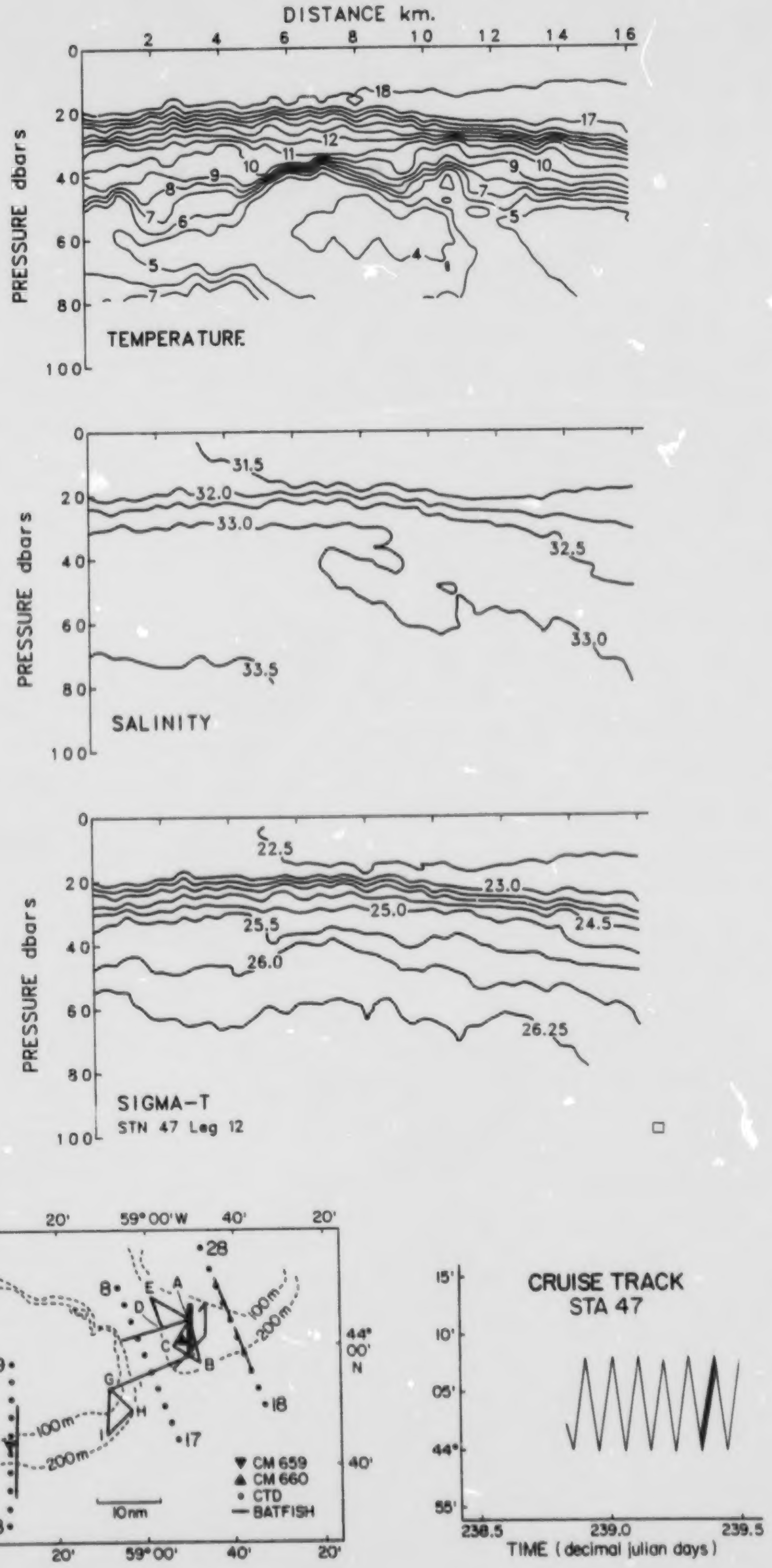
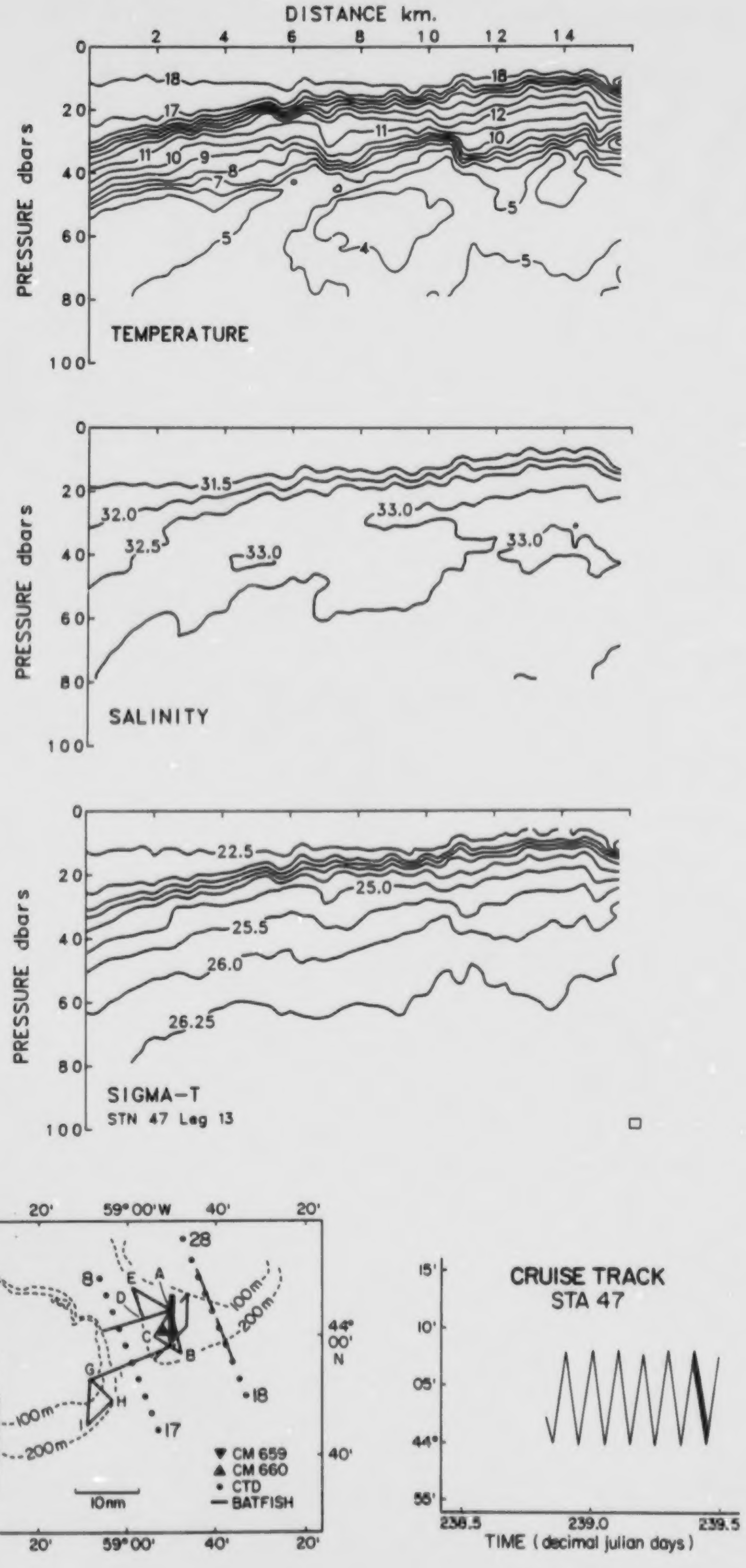

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 47 Leg 12
59°00'W
44° 00'
N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 47
TIME (decimal julian days)

Fig. 118



DISTANCE km.
2
4
6
8
10
12
14
0
20
40
60
80
100
PRESSURE dbars
18
17
11
10
9
8
7
5
4
12
TEMPERATURE
31.5
32.0
32.5
33.0
SALINITY
22.5
25.0
25.5
26.0
26.25
SIGMA-T
STN 47 Leg 13
40'
20'
59° 00'W
44° 00'
44° 00' N
29
38
28
8
E
A
D
C
B
G
H
I
18
17
100m
200m
▼ CM 659
▲ CM 660
• CTD
— BATFISH
10nm
59° 00'
CRUISE TRACK
STA 47
15'
10'
05'
44°
55'
238.5
239.0
239.5
TIME (decimal julian days)

Fig. 119

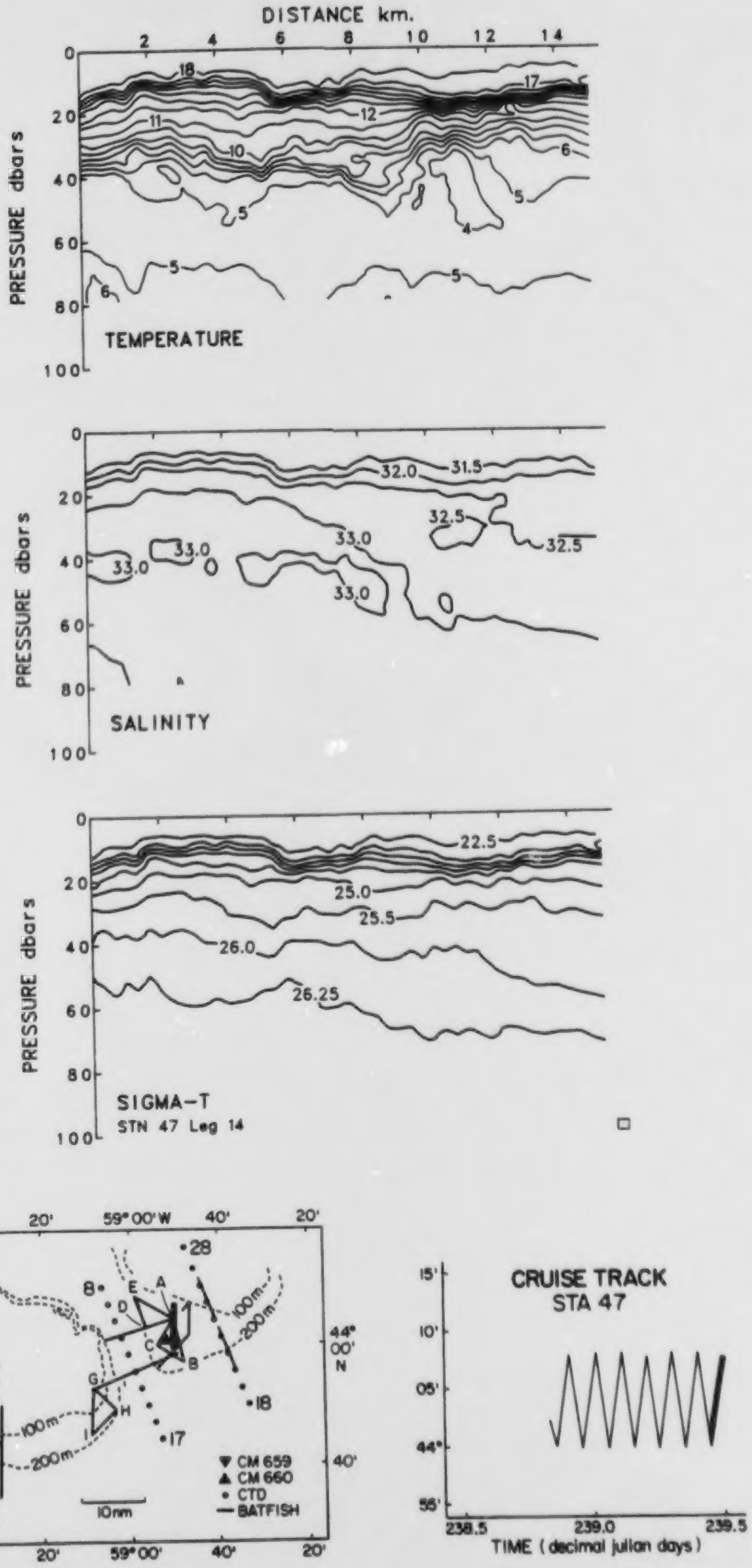

DISTANCE km.
2
4
6
8
10
12
14
PRESSURE dbars
0
20
40
60
80
100
18
17
12
11
10
6
5
4
TEMPERATURE
32.0
31.5
32.5
33.0
SALINITY
22.5
25.0
25.5
26.0
26.25
SIGMA-T
STN 47 Leg 14
40'
20'
59° 00' W
44° 00'
44° 00' N
29
38
28
8
18
17
A
B
C
D
E
G
H
I
100m
200m
10nm
▼ CM 659
▲ CM 660
• CTD
— BATFISH
59° 00'
CRUISE TRACK
STA 47
15'
10'
05'
44°
55'
238.5
239.0
239.5
TIME (decimal julian days)

Fig. 120

Figures 121-142.

BATFISH station 48: 15 sections of Temperature, Salinity and Sigma-t vs. pressure, location map and latitude vs. time plot. Acoustic backscatter plots for selected sections.

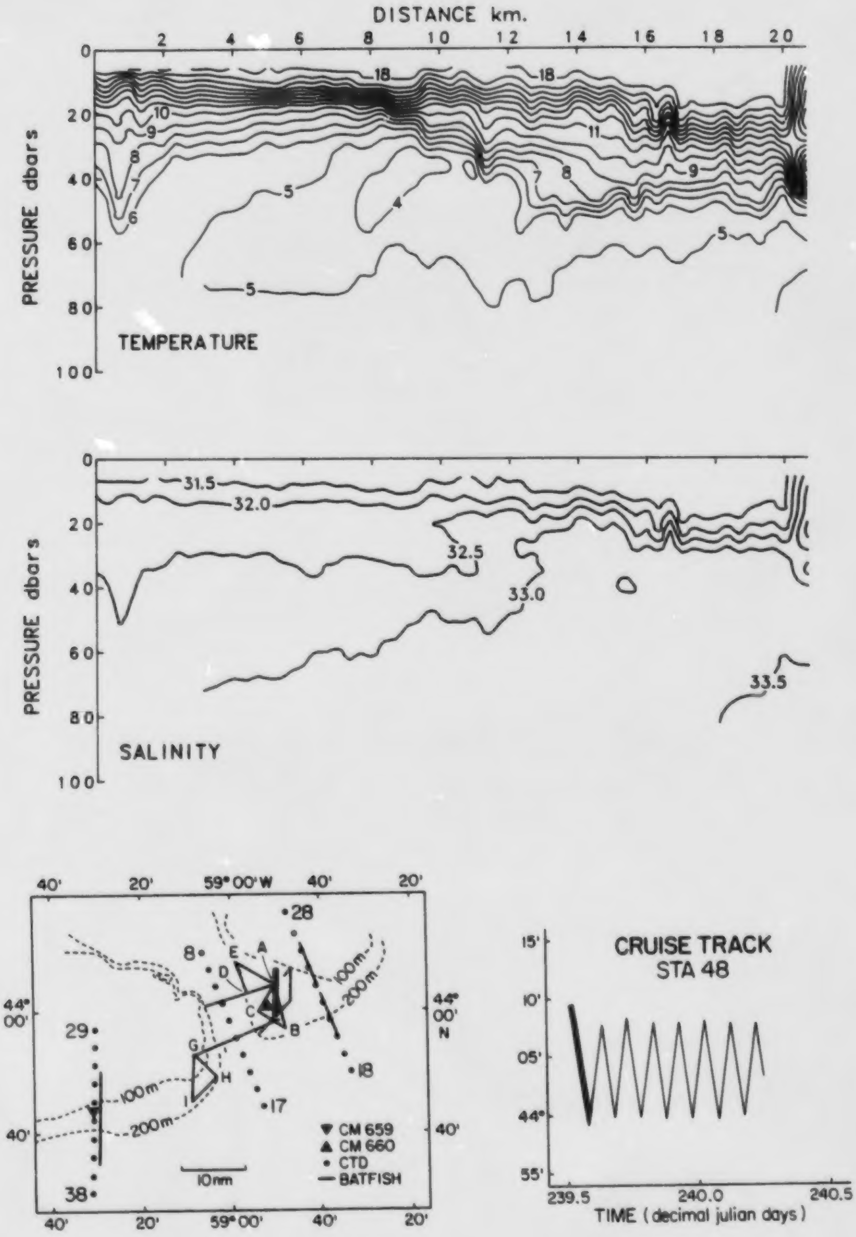

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
31.5
32.0
32.5
33.0
33.5
59° 00' W
44° 00'
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 48
TIME (decimal julian days)

Fig. 121

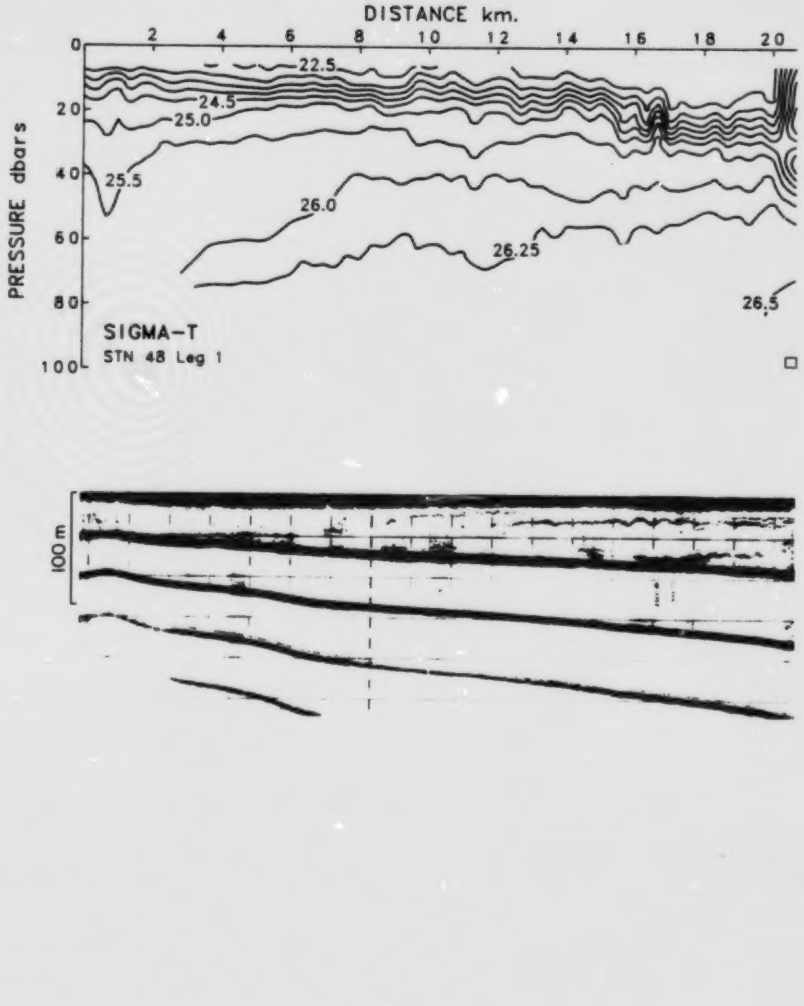

DISTANCE km.
0
2
4
6
8
10
12
14
16
18
20
20
40
60
80
100
PRESSURE dbars
22.5
24.5
25.0
25.5
26.0
26.25
26.5
SIGMA-T
STN 48 Leg 1
100 m

Fig. 122

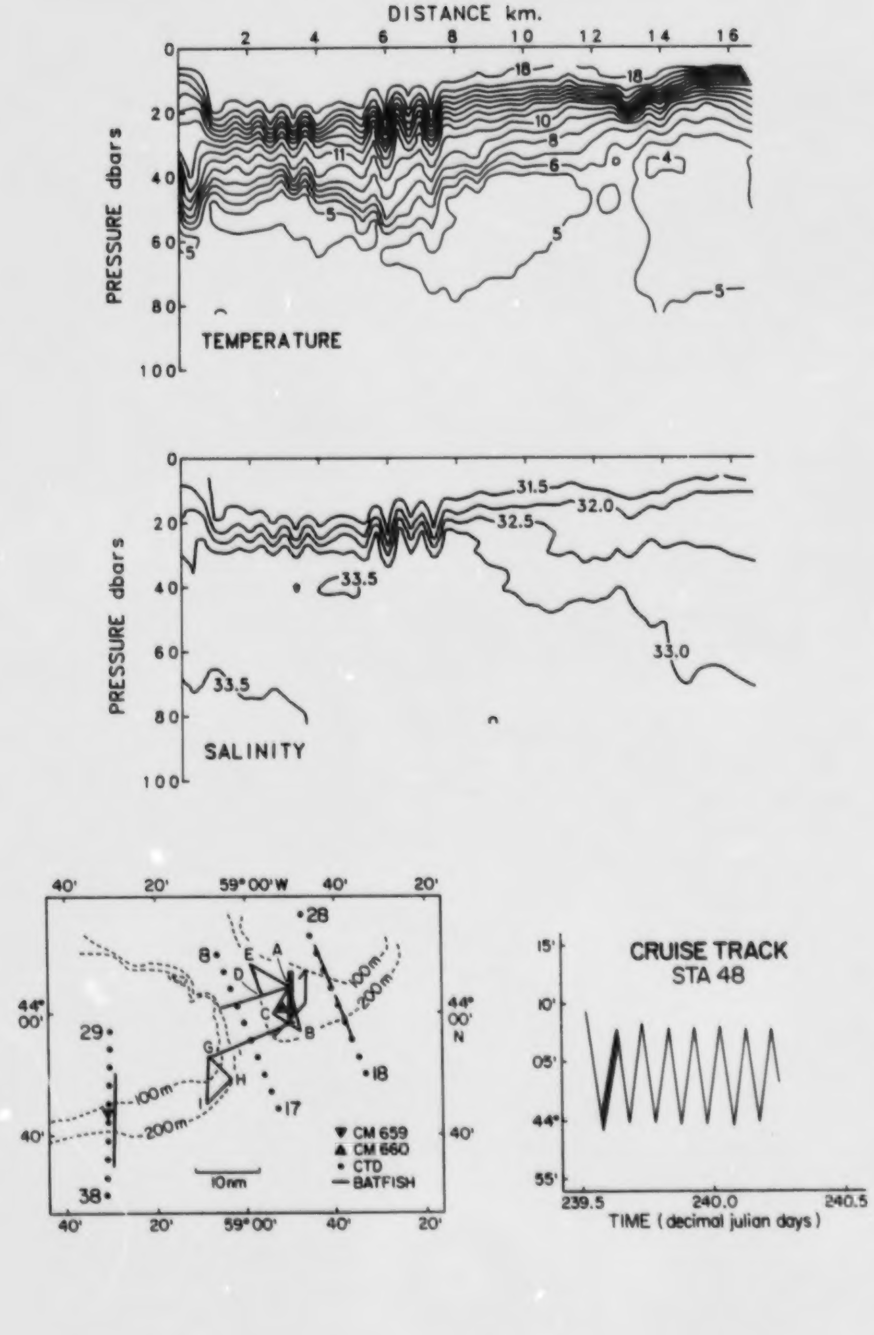

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
CRUISE TRACK
STA 48
TIME (decimal julian days)
CM 659
CM 660
CTD
BATFISH
10nm
59° 00' W
44° 00' N

Fig. 123

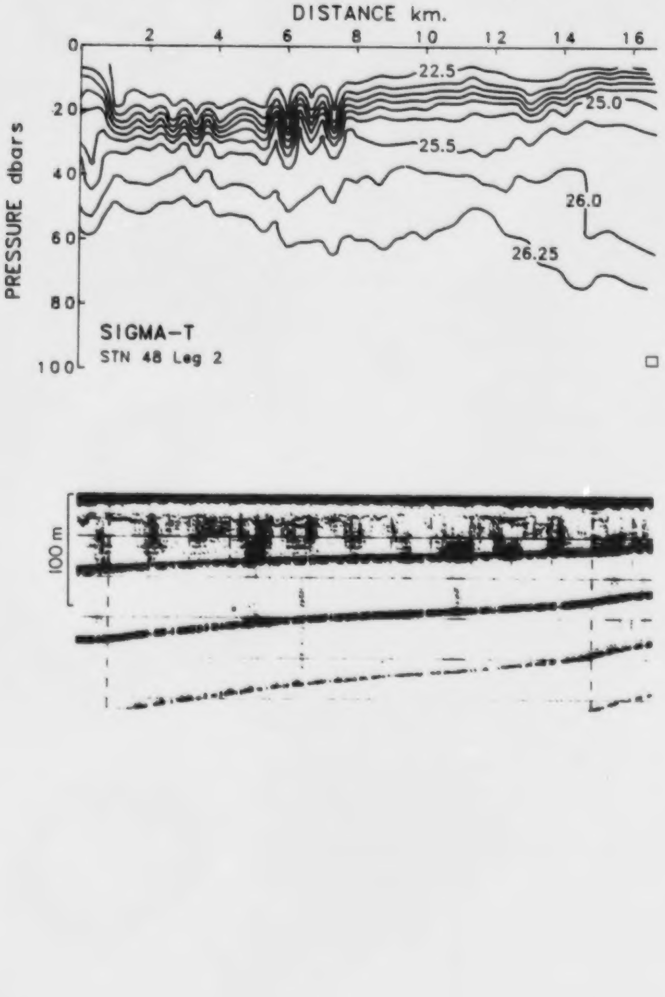

DISTANCE km.
2 4 6 8 10 12 14 16
0 20 40 60 80 100
PRESSURE dbars
22.5
25.0
25.5
26.0
26.25
SIGMA-T
STN 48 Leg 2
100 m

Fig. 124

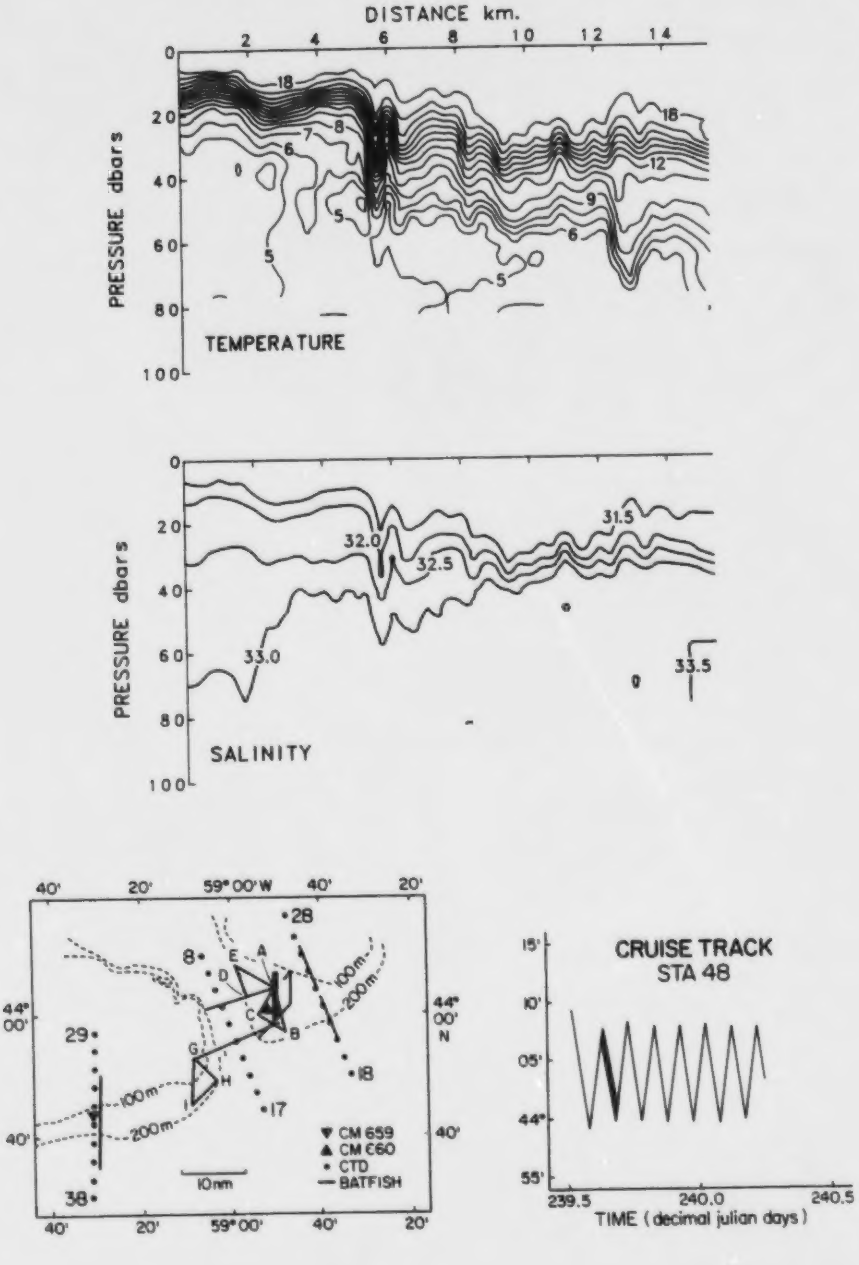

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
32.0
32.5
31.5
33.0
33.5
59° 00' W
44° 00' N
▼ CM 659
▲ CM 660
• CTD
— BATFISH
10nm
100m
200m
CRUISE TRACK
STA 48
TIME (decimal julian days)

Fig. 125

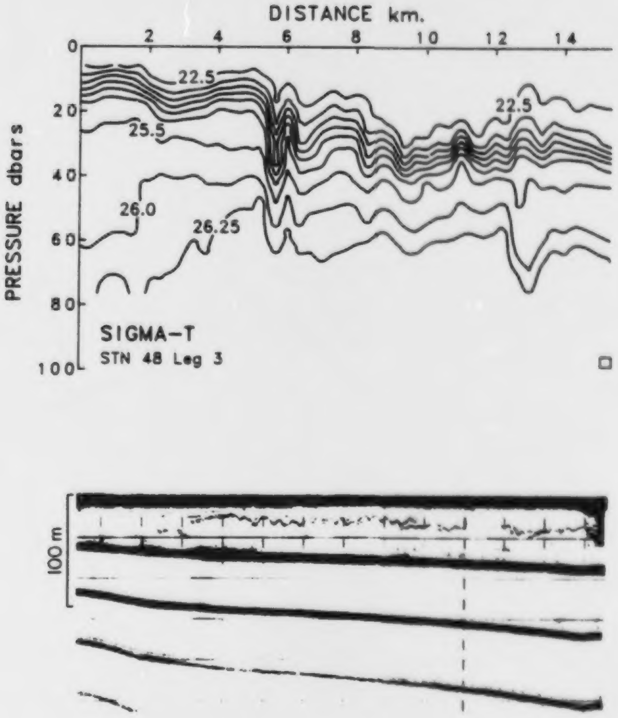

DISTANCE km.
2
4
6
8
10
12
14
0
20
40
60
80
100
PRESSURE dbars
22.5
25.5
22.5
26.0
26.25
SIGMA-T
STN 48 Leg 3
100 m

Fig. 126

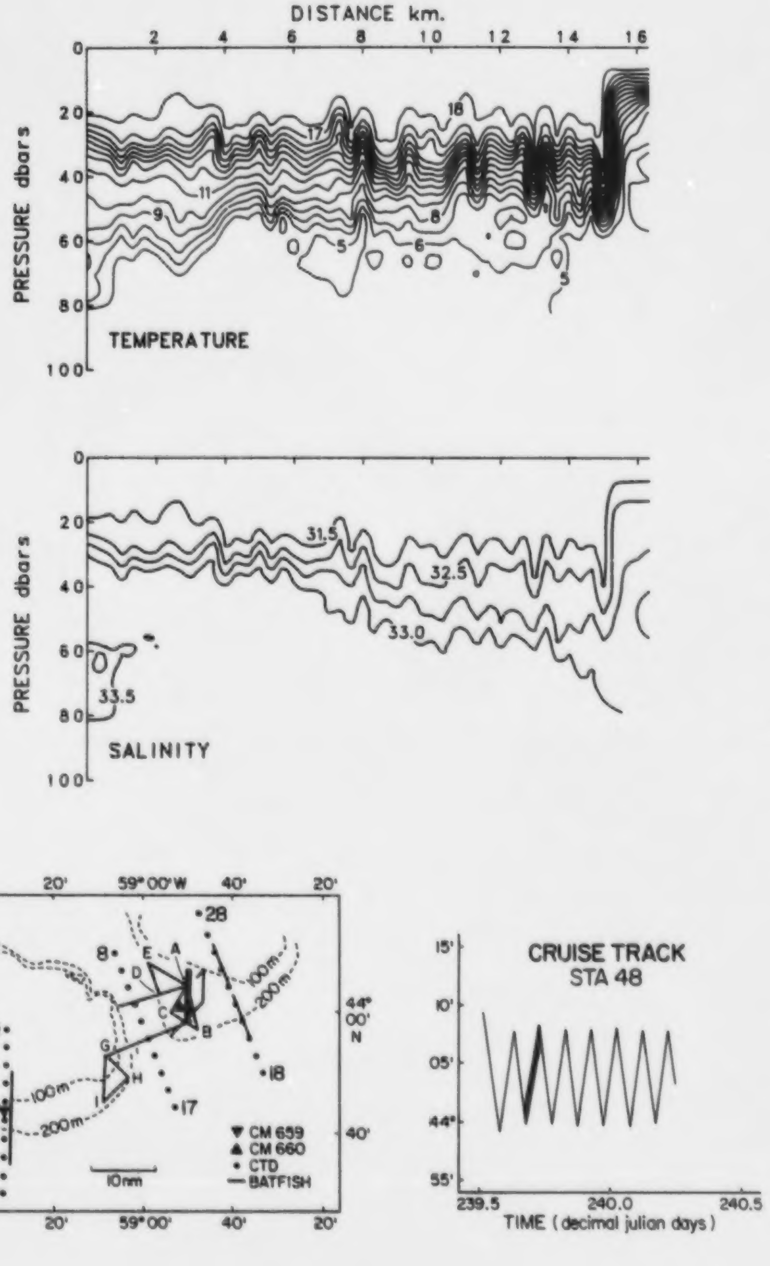
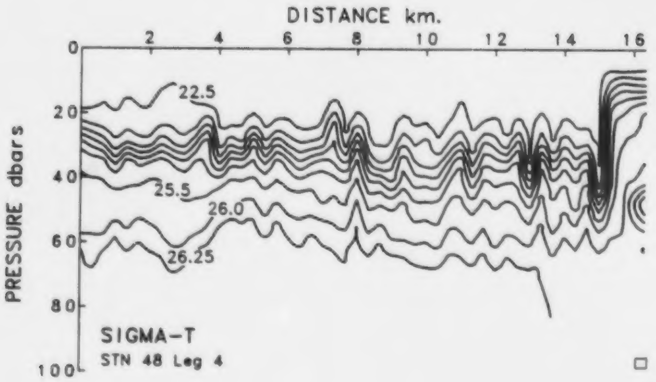

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
31.5
32.5
33.0
33.5
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
59° 00'W
44° 00' N
CRUISE TRACK
STA 48
TIME (decimal julian days)

Fig. 127


DISTANCE km.
2
4
6
8
10
12
14
16
0
20
40
60
80
100
PRESSURE dbars
22.5
25.5
26.0
26.25
SIGMA-T
STN 48 Leg 4

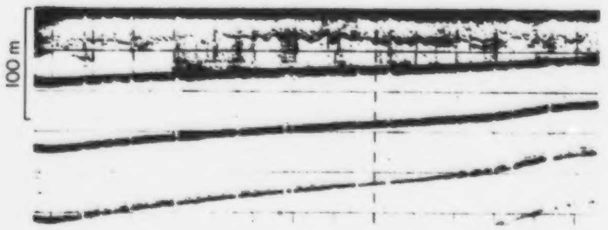

100 m

Fig. 128

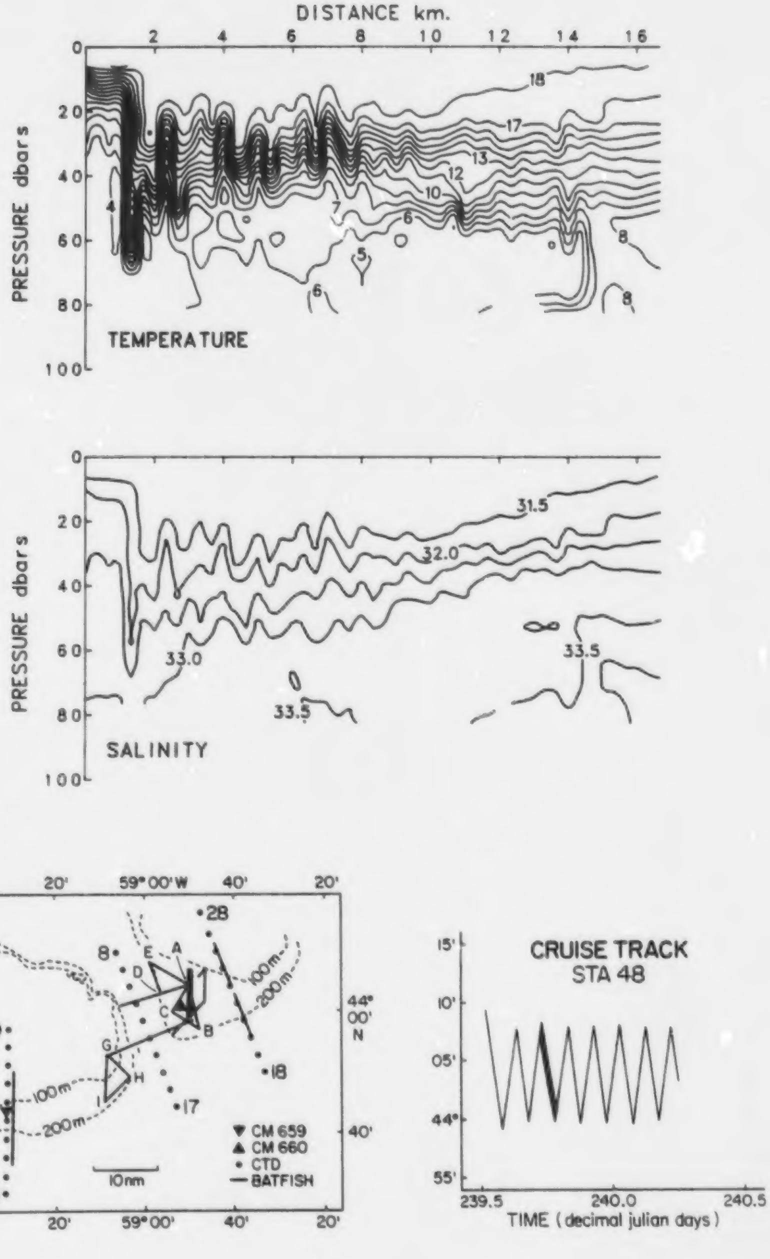

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
31.5
32.0
33.0
33.5
59°00'W
44°
00'
N
29
38
28
8
18
17
100m
200m
CM 659
CM 660
CTD
BATFISH
10nm
CRUISE TRACK
STA 48
TIME (decimal julian days)
239.5
240.0
240.5

Fig. 129

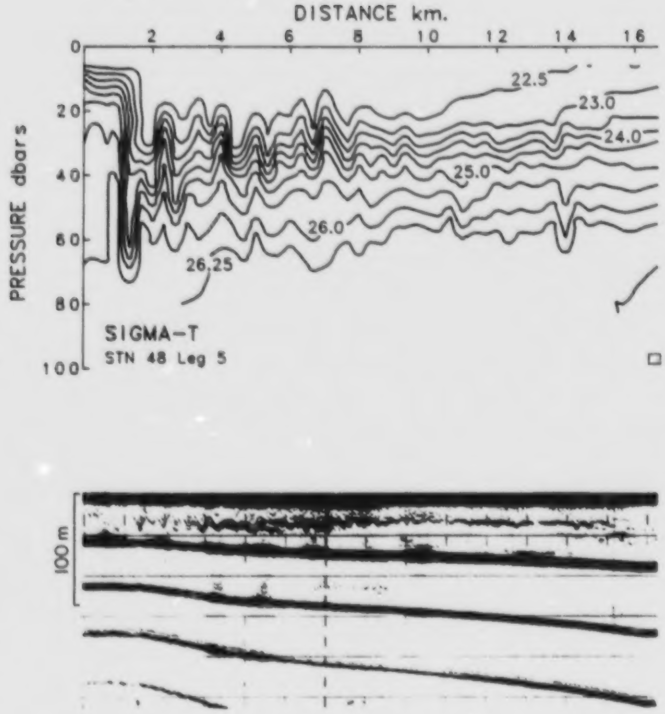
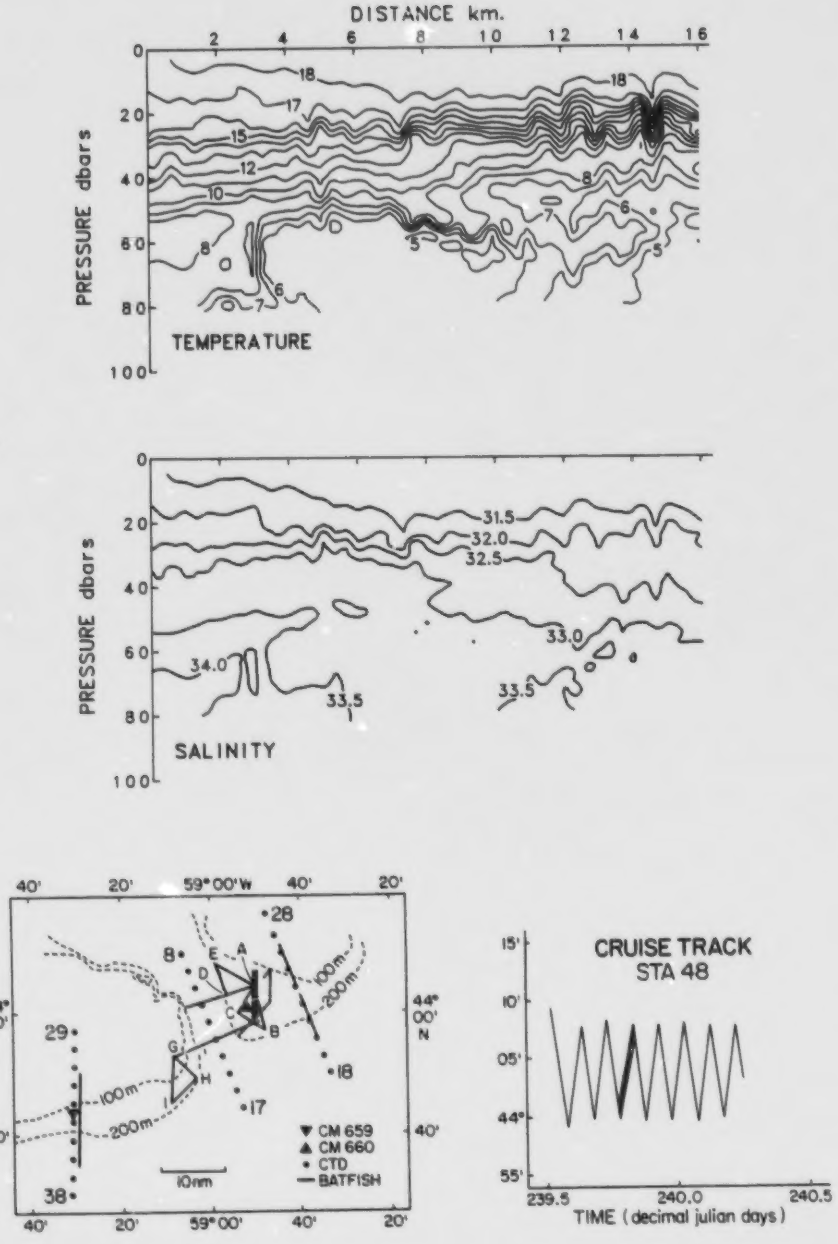
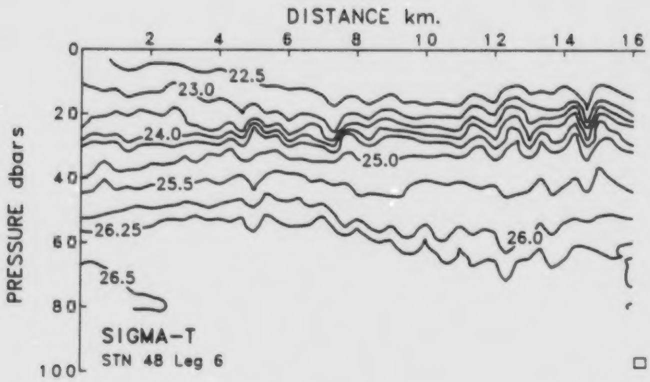

DISTANCE km.
2 4 6 8 10 12 14 16
PRESSURE dbars
0 20 40 60 80 100
22.5
23.0
24.0
25.0
26.0
26.25
SIGMA-T
STN 48 Leg 5
100 m

Fig. 130



DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
31.5
32.0
32.5
33.0
33.5
34.0
59°00'W
44° 00'
44° 00' N
100m
200m
CM 659
CM 660
CTD
BATFISH
10nm
CRUISE TRACK
STA 48
TIME (decimal julian days)

Fig. 131


DISTANCE km.
2
4
6
8
10
12
14
16
0
20
40
60
80
100
PRESSURE dbars
22.5
23.0
24.0
25.0
25.5
26.0
26.25
26.5
SIGMA-T
STN 48 Leg 6

100 m

Fig. 132

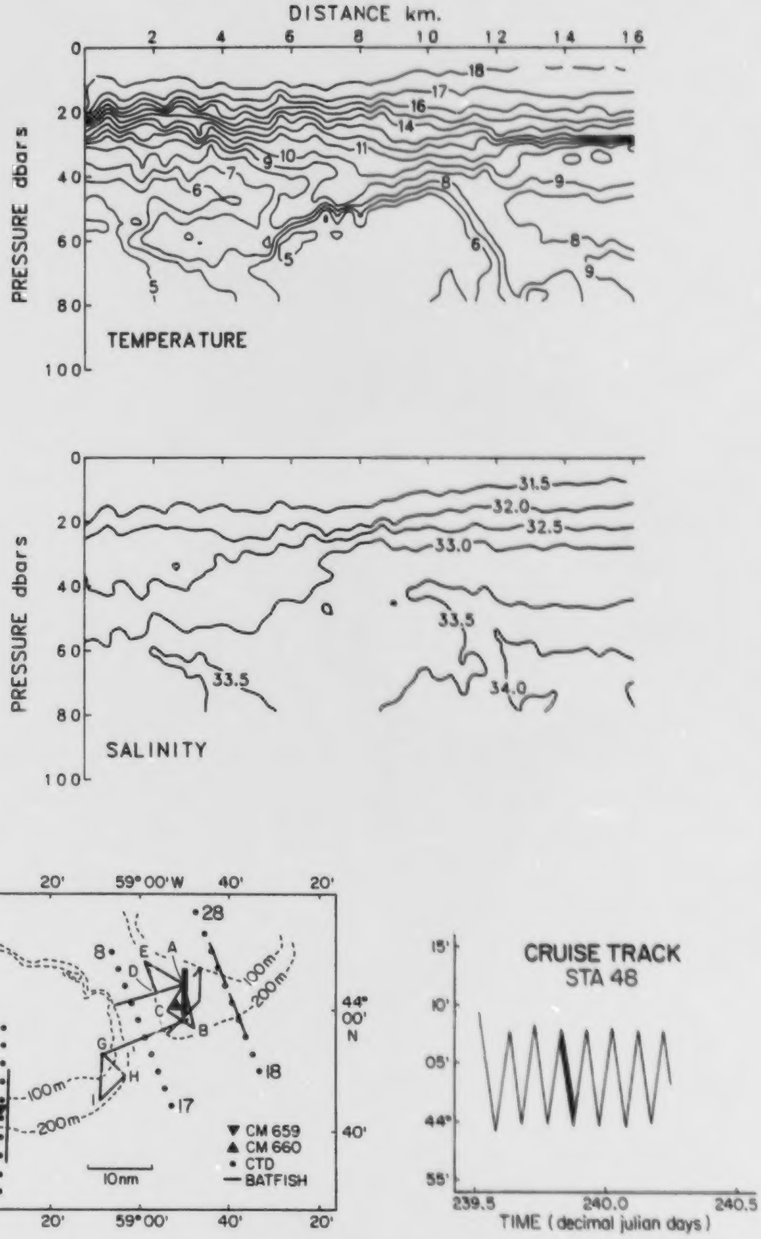

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
59°00'W
44° 00'
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 48
TIME (decimal julian days)

Fig. 133

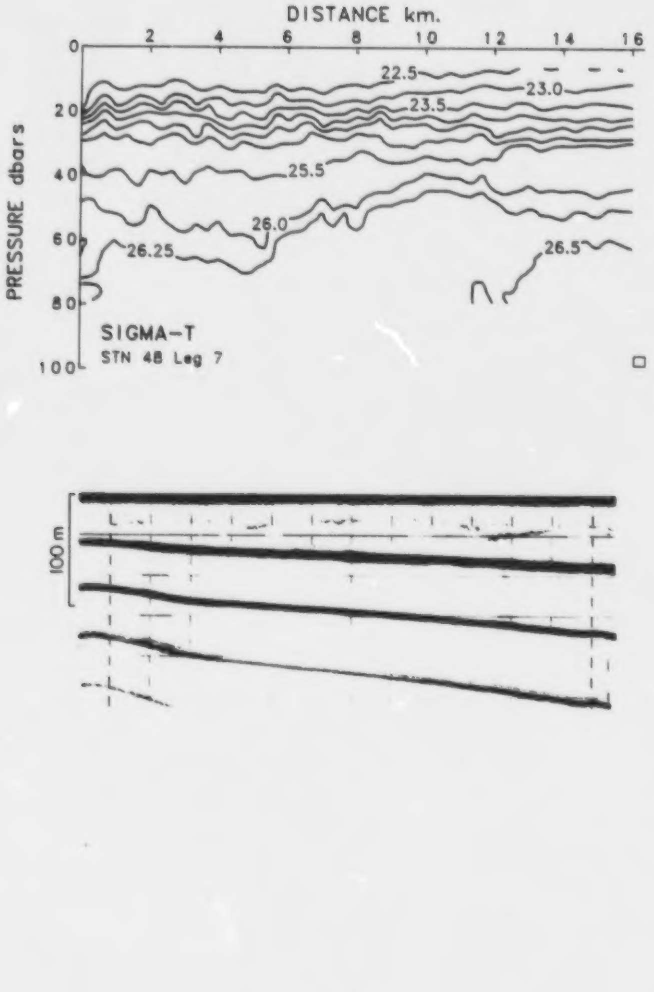

DISTANCE km.
2 4 6 8 10 12 14 16
0 20 40 60 80 100
PRESSURE dbars
22.5
23.0
23.5
25.5
26.0
26.25
26.5
SIGMA-T
STN 48 Leg 7
100 m

Fig. 134

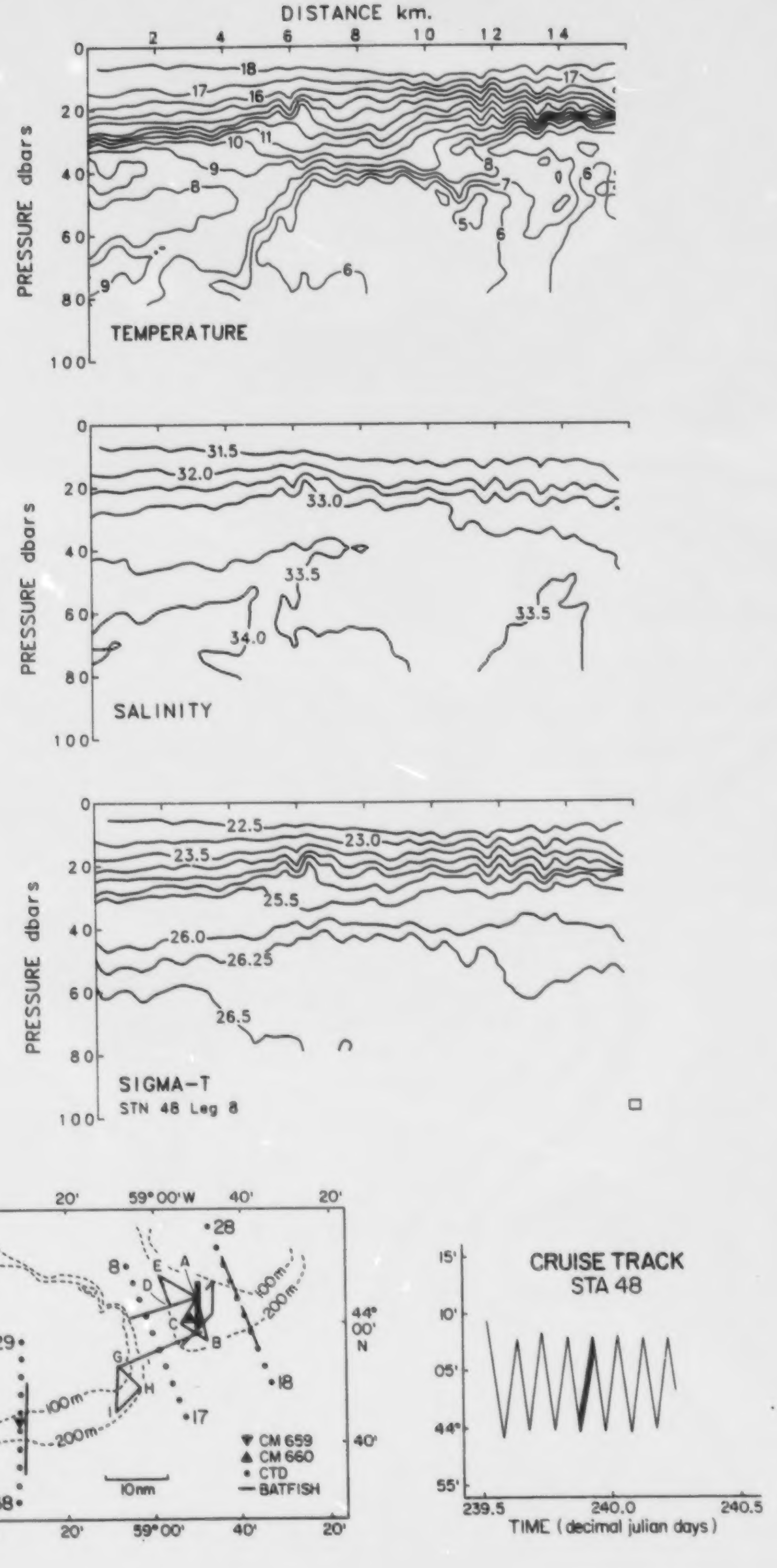

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 48 Leg 8
59° 00' W
44° 00'
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 48
TIME (decimal julian days)

Fig. 135

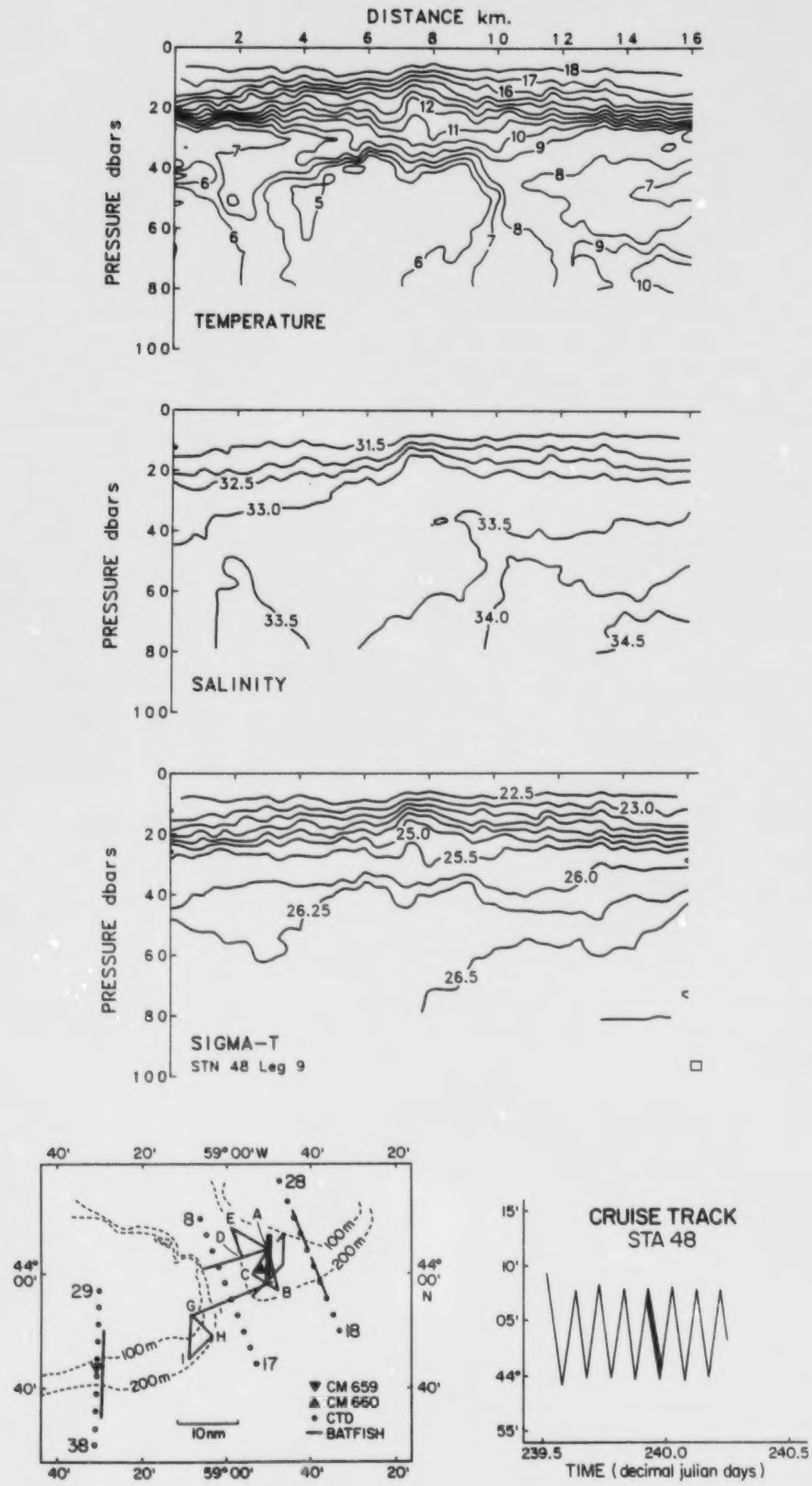
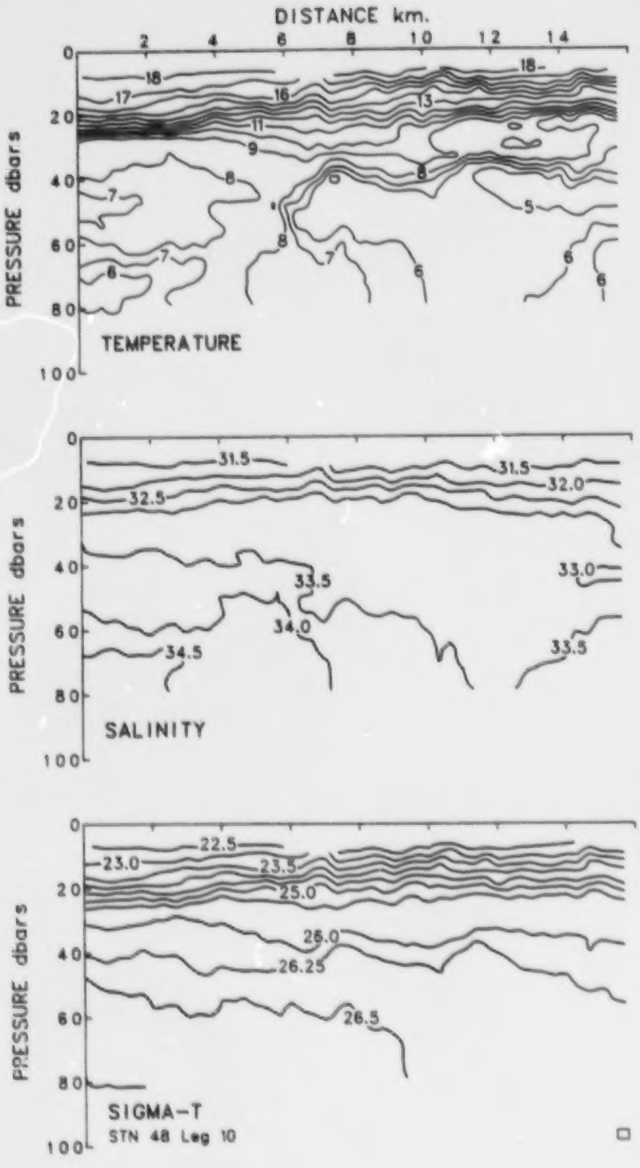
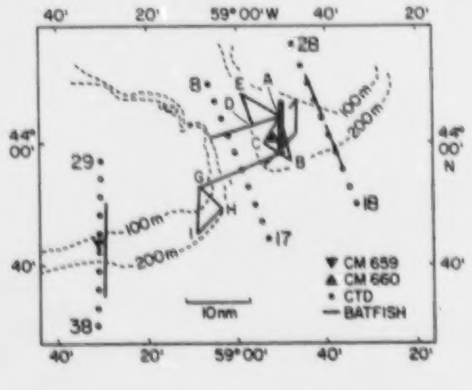

DISTANCE km.
2 4 6 8 10 12 14 16
0 20 40 60 80 100
PRESSURE dbars
18 17 16 12 11 10 9 8 7 6 5
TEMPERATURE
31.5 32.5 33.0 33.5 34.0 34.5
SALINITY
22.5 23.0 25.0 25.5 26.0 26.25 26.5
SIGMA-T
STN 48 Leg 9
40' 20' 59° 00' W 40' 20'
44° 00' N
40'
28 8 29 38 17 18
A B C D E G H I
100m 200m
10nm
CM 659
CM 660
CTD
BATFISH
CRUISE TRACK
STA 48
15' 10' 05' 44° 55'
239.5 240.0 240.5
TIME (decimal julian days)

Fig. 136


DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 48 Leg 10


59° 00' W
44° 00'
44° 00' N
100m
200m
▼ CM 659
▲ CM 660
• CTD
— BATFISH
10nm

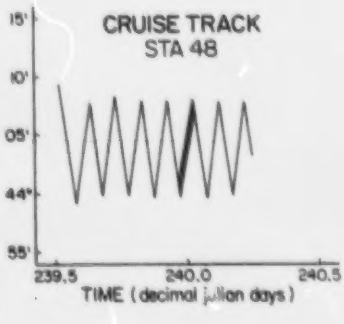
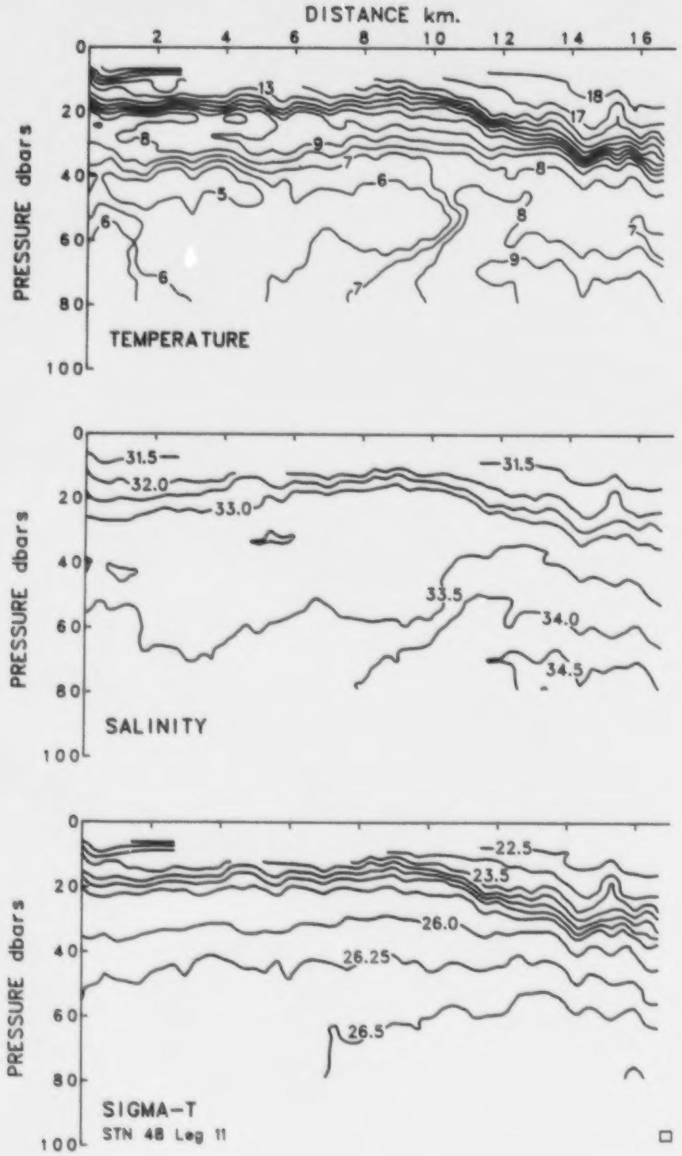
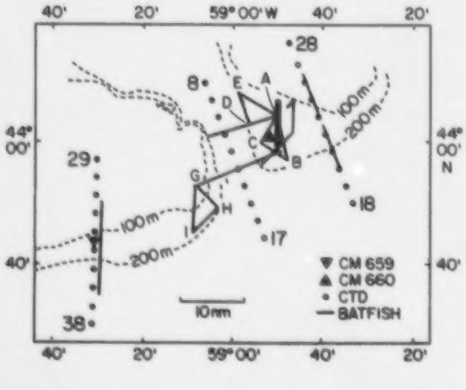

CRUISE TRACK
STA 48
TIME (decimal julian days)

Fig. 137


DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 48 Leg 11


CM 659
CM 660
CTD
BATFISH
10nm
100m
200m

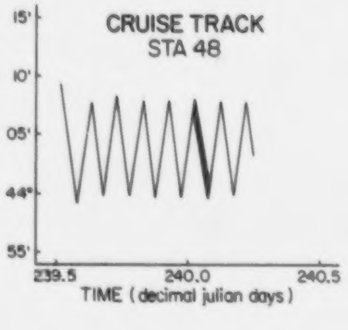

CRUISE TRACK
STA 48
TIME (decimal julian days)

Fig. 138

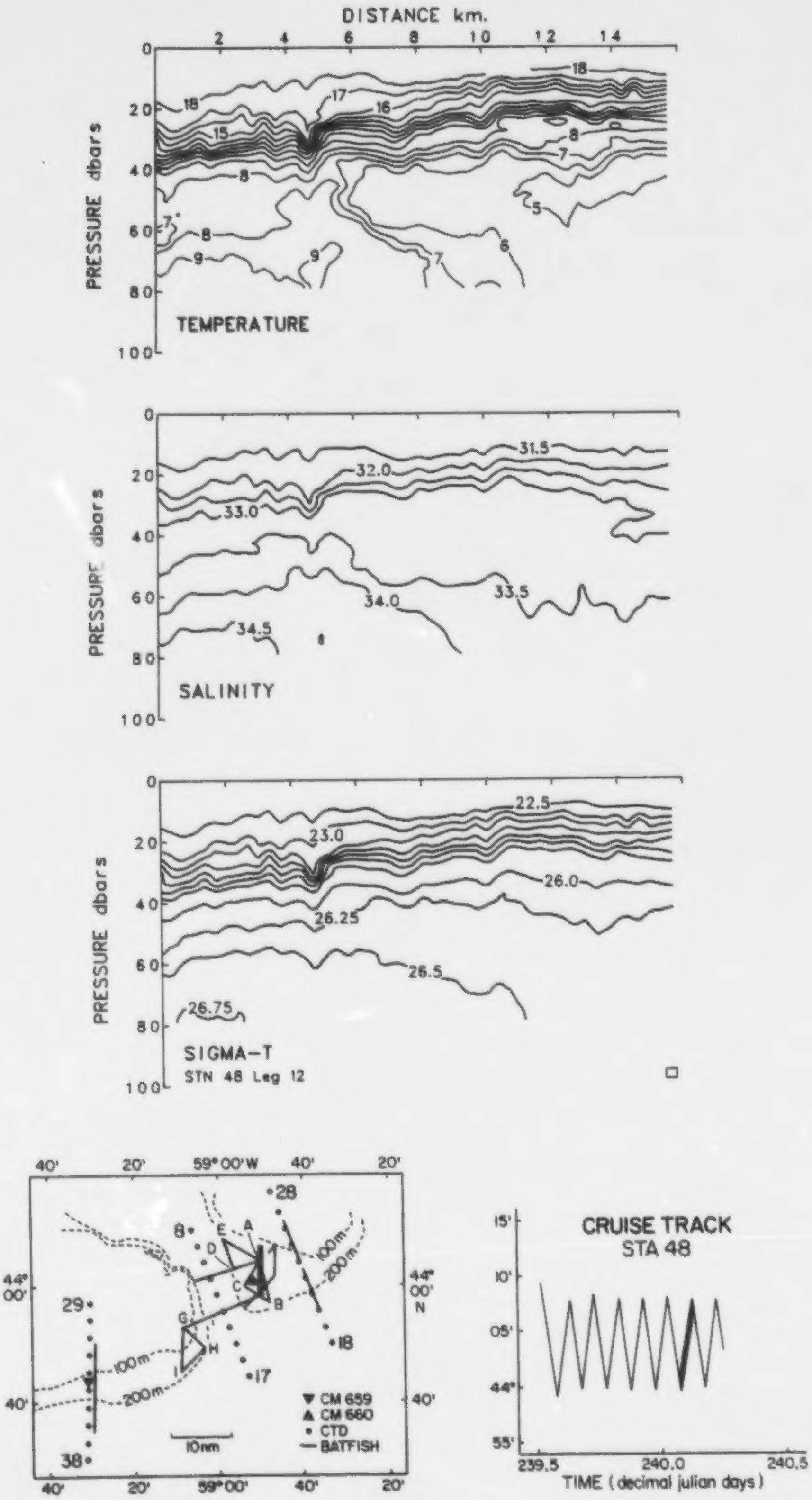
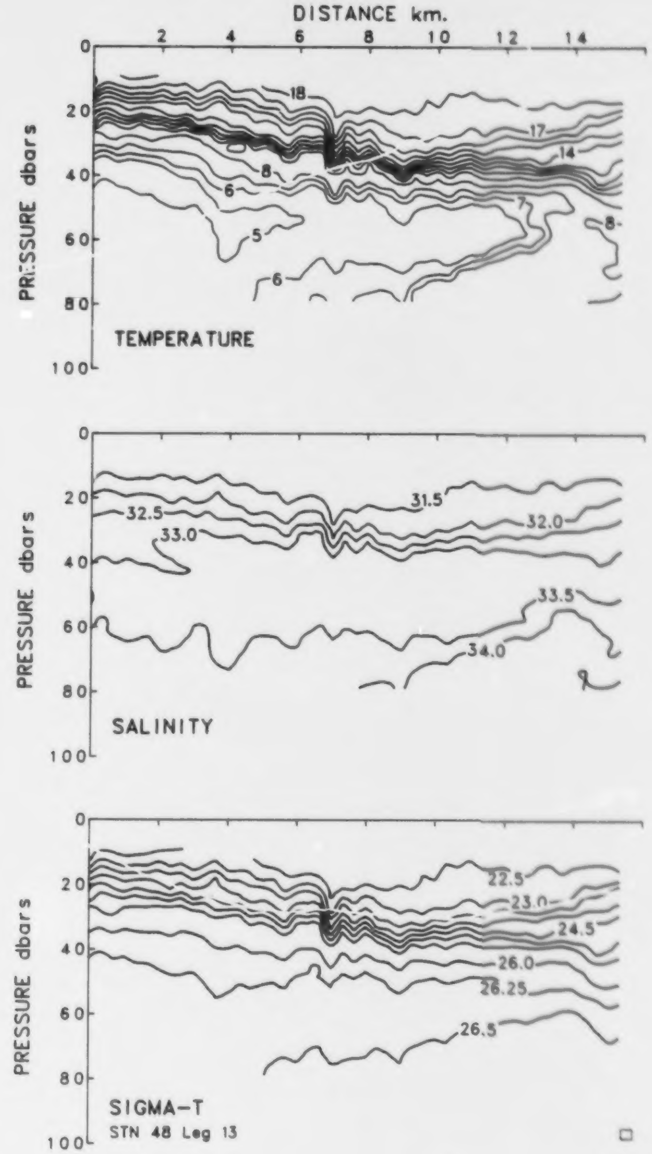
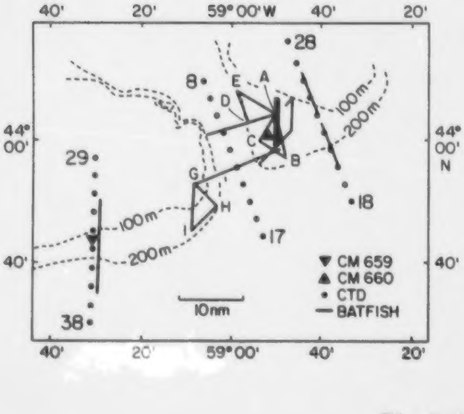

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
PRESSURE dbars
SIGMA-T
STN 48 Leg 12
59°00'W
44°
00'
N
100m
200m
CM 659
CM 660
CTD
BATFISH
10nm
CRUISE TRACK
STA 48
TIME (decimal julian days)

Fig. 139


DISTANCE km.
2 4 6 8 10 12 14
PRESSURE dbars
0 20 40 60 80 100
18 17 14 8 6 5 6 7 8
TEMPERATURE
31.5 32.0 32.5 33.0 33.5 34.0
SALINITY
22.5 23.0 24.5 26.0 26.25 26.5
SIGMA-T
STN 48 Leg 13


40' 20' 59°00'W 40' 20'
44° 00'
44° 00' N
40'
28
8
E A D C B G H I
29
18
17
38
100m
200m
CM 659
CM 660
CTD
BATFISH
10nm
40' 20' 59°00' 40' 20'

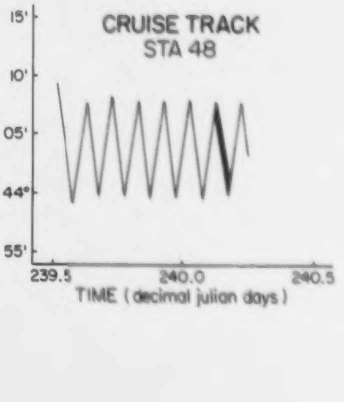

CRUISE TRACK
STA 48
15'
10'
05'
44°
55'
239.5
240.0
240.5
TIME (decimal julian days)

Fig. 140

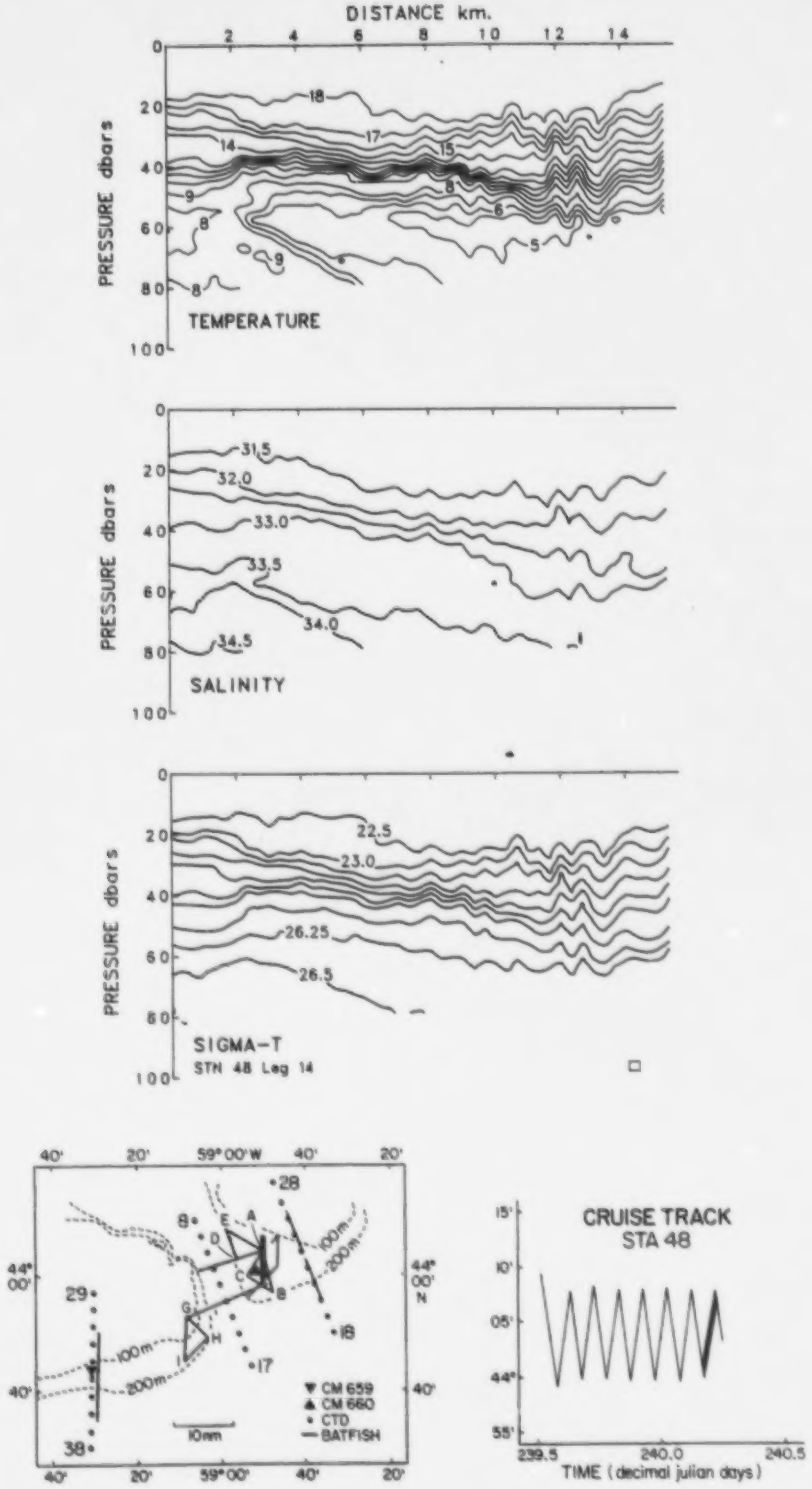

DISTANCE km.
2 4 6 8 10 12 14
PRESSURE dbars
0 20 40 60 80 100
18
17
14
15
9
8
6
5
TEMPERATURE
31.5
32.0
33.0
33.5
34.0
34.5
SALINITY
22.5
23.0
26.25
26.5
SIGMA-T
STN 48 Leg 14
40' 20' 59° 00' W 40' 20'
44° 00'
44° 00' N
40'
28
8
29
38
18
17
A B C D E G H I
100m
200m
10nm
▼ CM 659
▲ CM 660
• CTD
— BATFISH
40' 20' 59° 00' 40' 20'
CRUISE TRACK
STA 48
15'
10'
05'
44°
55'
239.5 240.0 240.5
TIME (decimal julian days)

Fig. 141

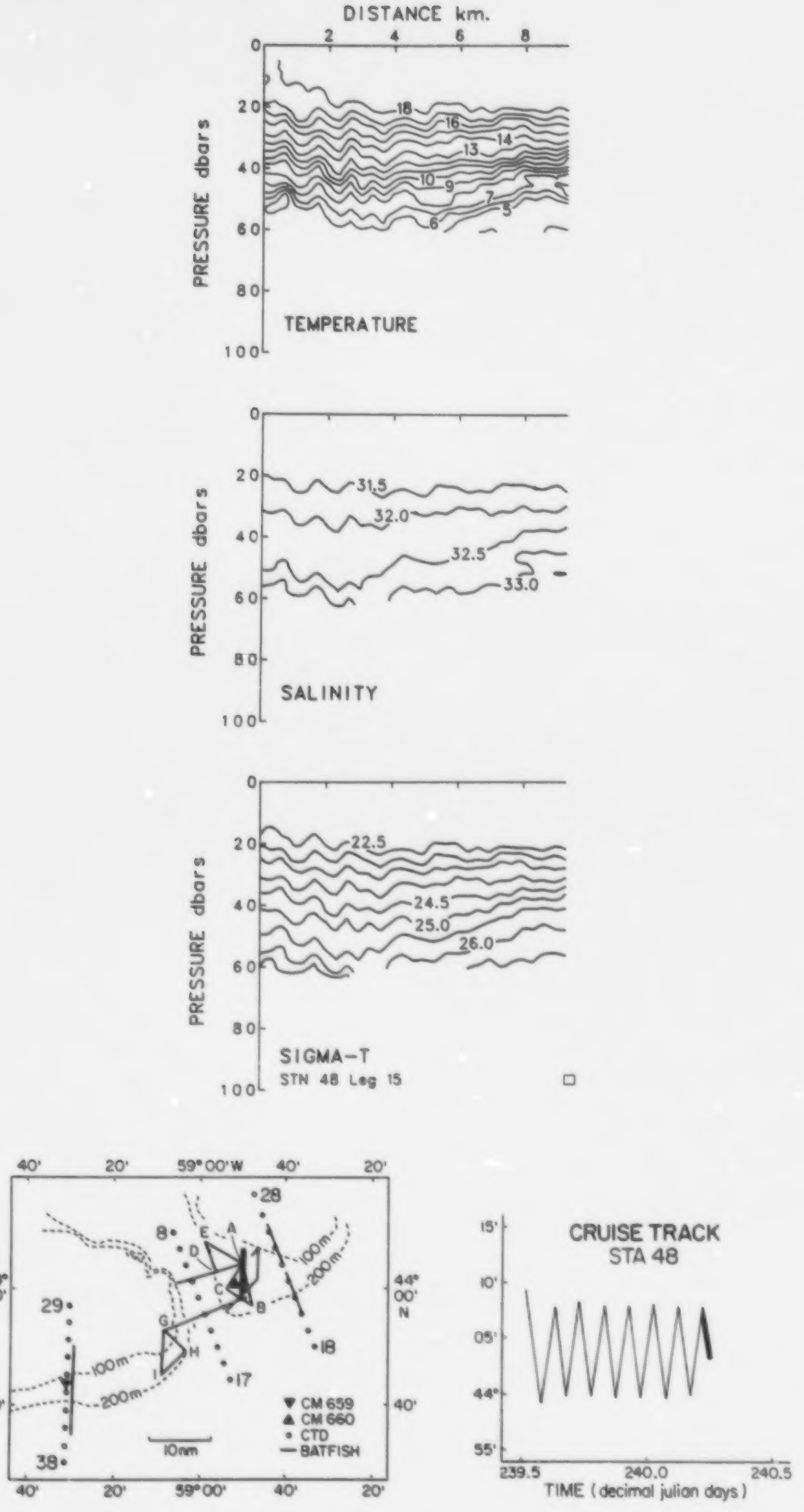

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 48 Leg 15
CM 659
CM 660
CTD
BATFISH
10nm
CRUISE TRACK
STA 48
TIME (decimal julian days)

Fig. 142

Figures 143-157.

BATFISH station 49: 12 sections of Temperature, Salinity and Sigma-t vs. pressure, location map and latitude vs. time plot. Acoustic backscatter plots for selected sections.

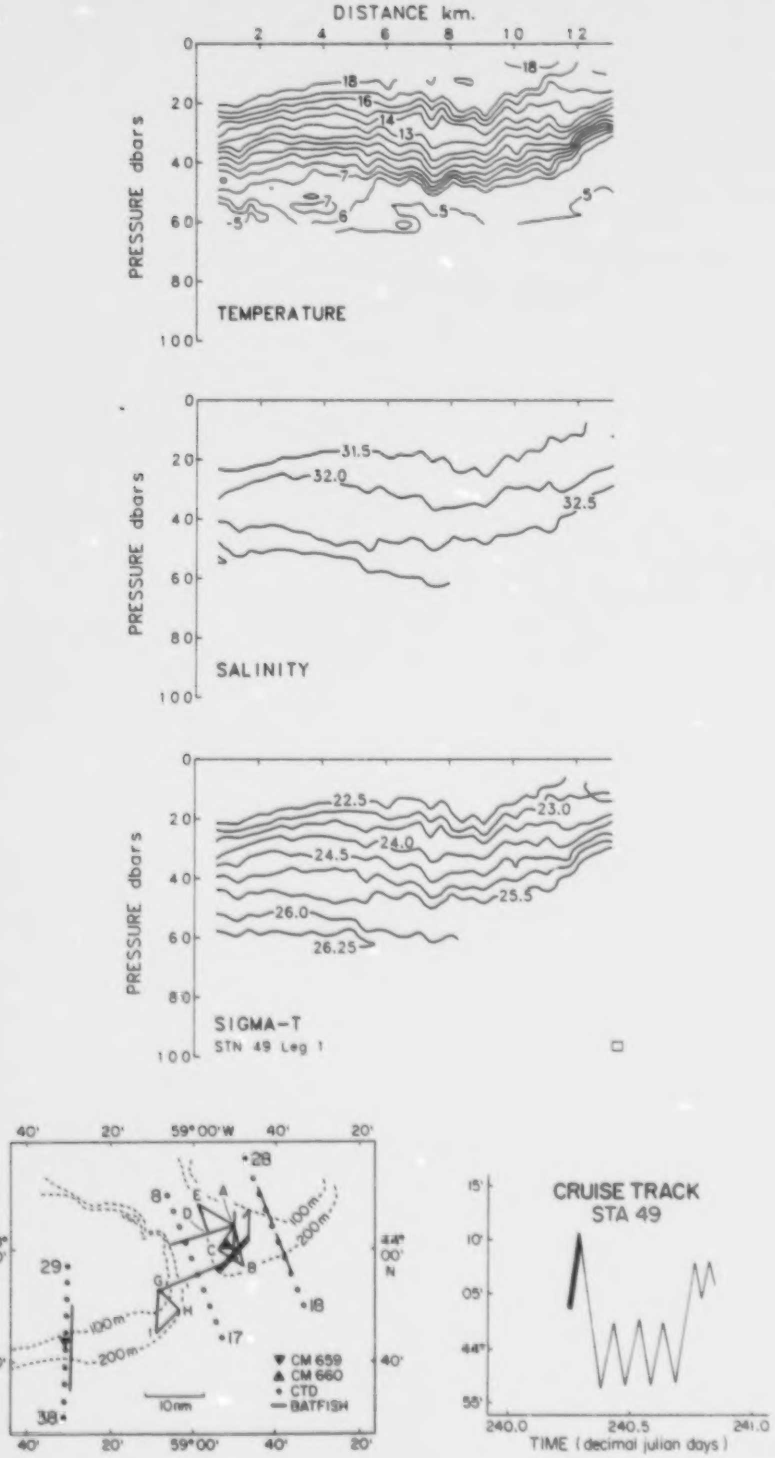

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 49 Leg 1
59° 00' W
44° 00' N
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 49
TIME (decimal julian days)

Fig. 143

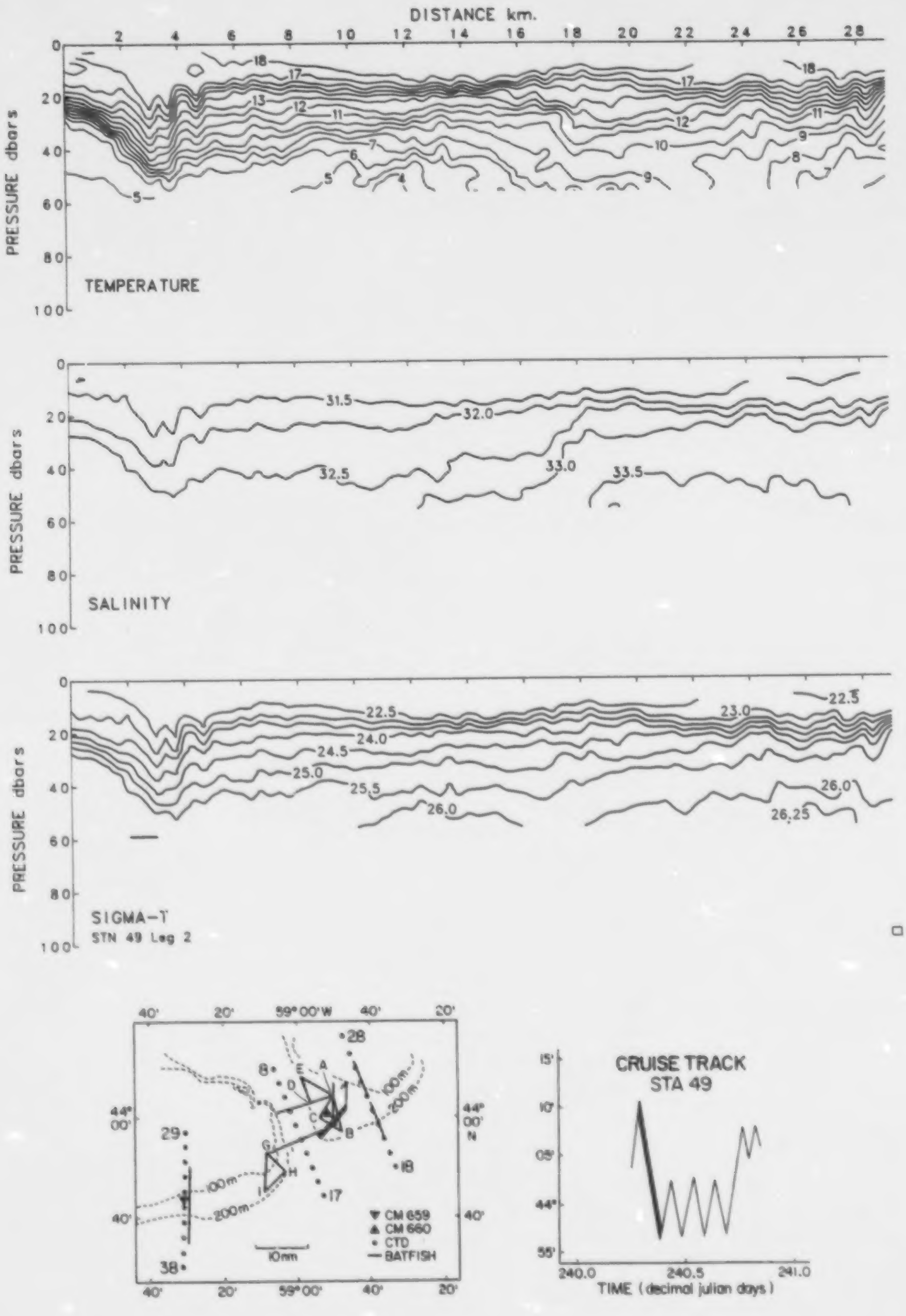

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 49 Leg 2
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
59°00'W
44° 00' N
CRUISE TRACK
STA 49
TIME (decimal julian days)
240.0
240.5
241.0

Fig. 144

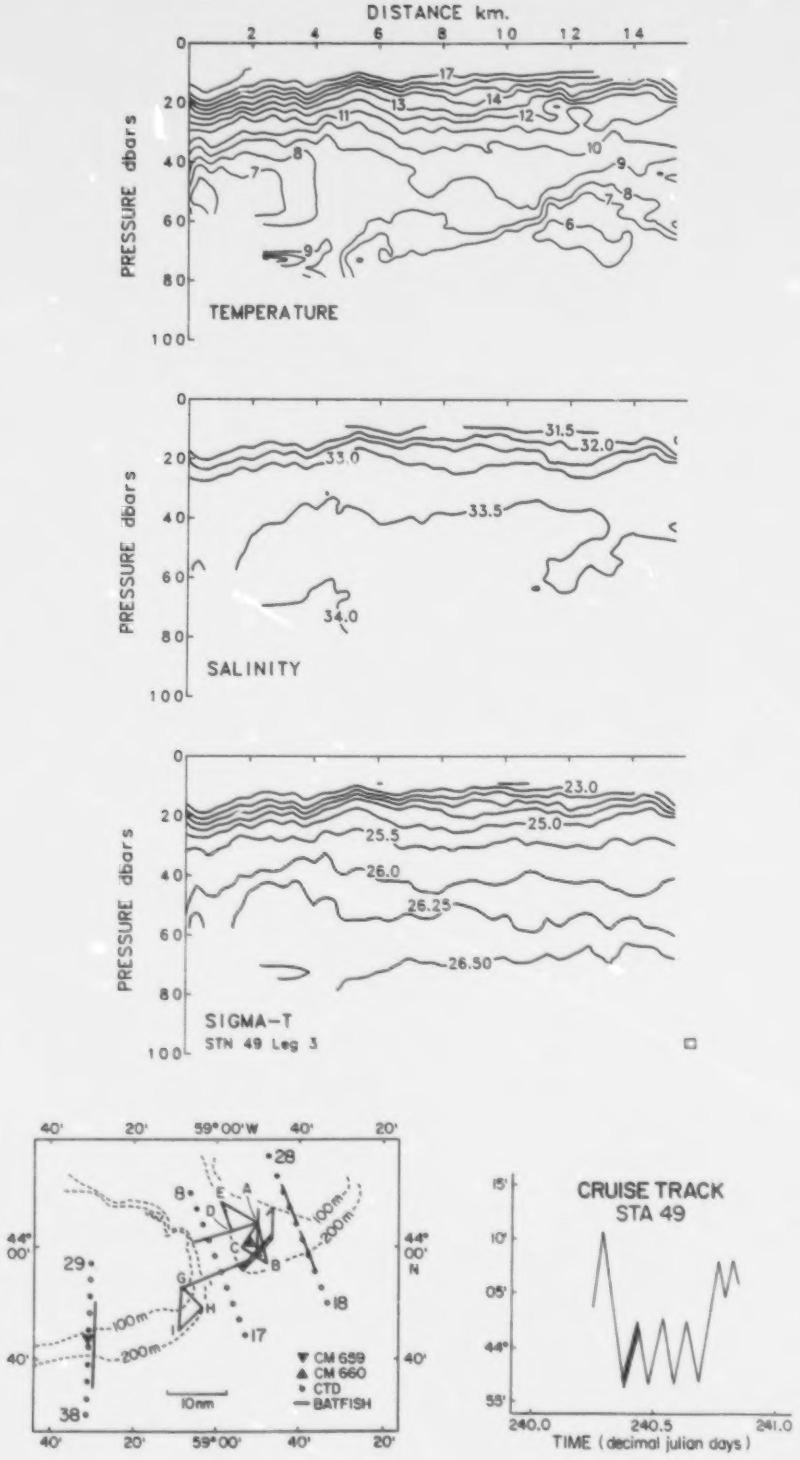

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 49 Leg 3
CRUISE TRACK
STA 49
TIME (decimal julian days)
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m

Fig. 145

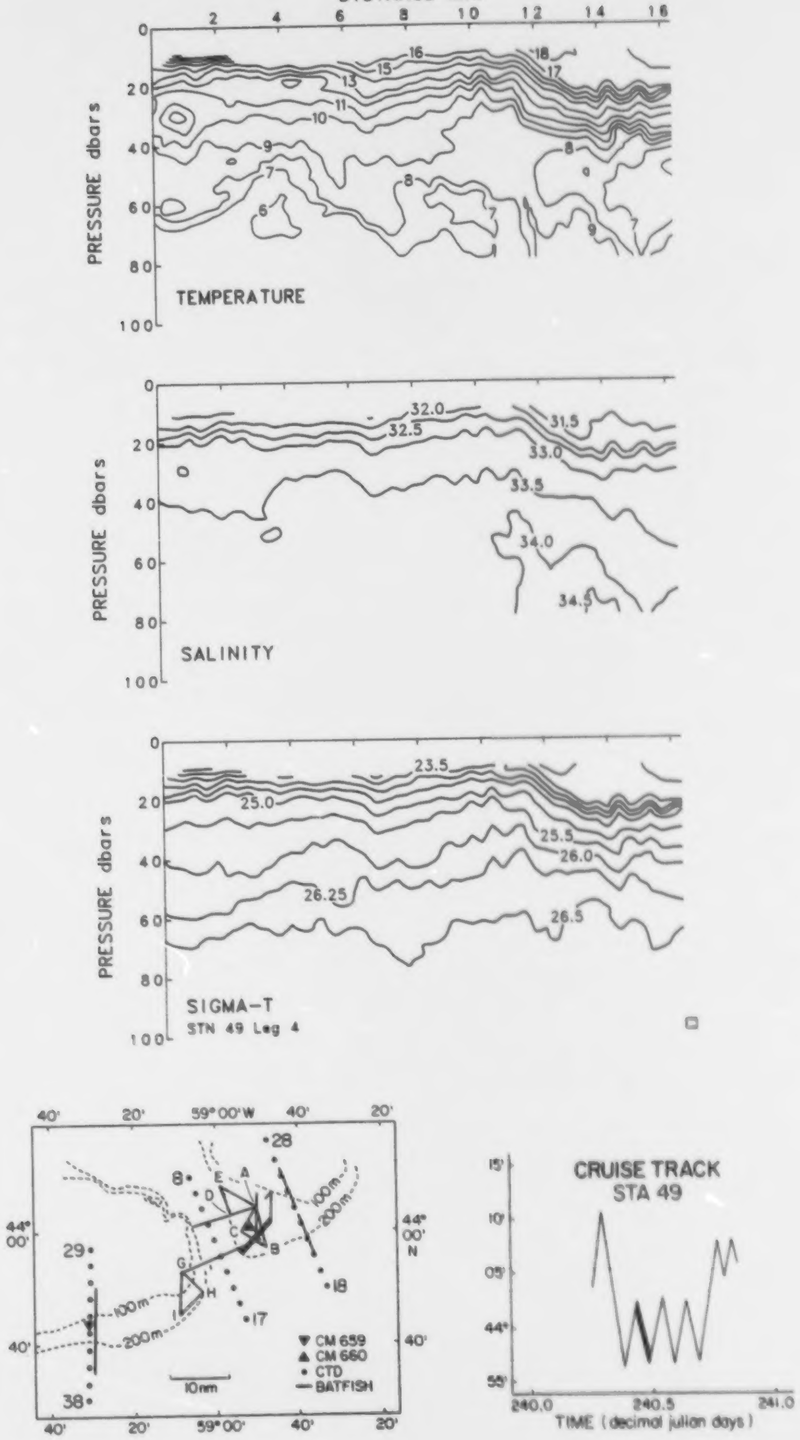

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 49 Leg 4
CRUISE TRACK
STA 49
TIME (decimal julian days)
CM 659
CM 660
CTD
BATFISH
10nm
59° 00' W
100m
200m

Fig. 146

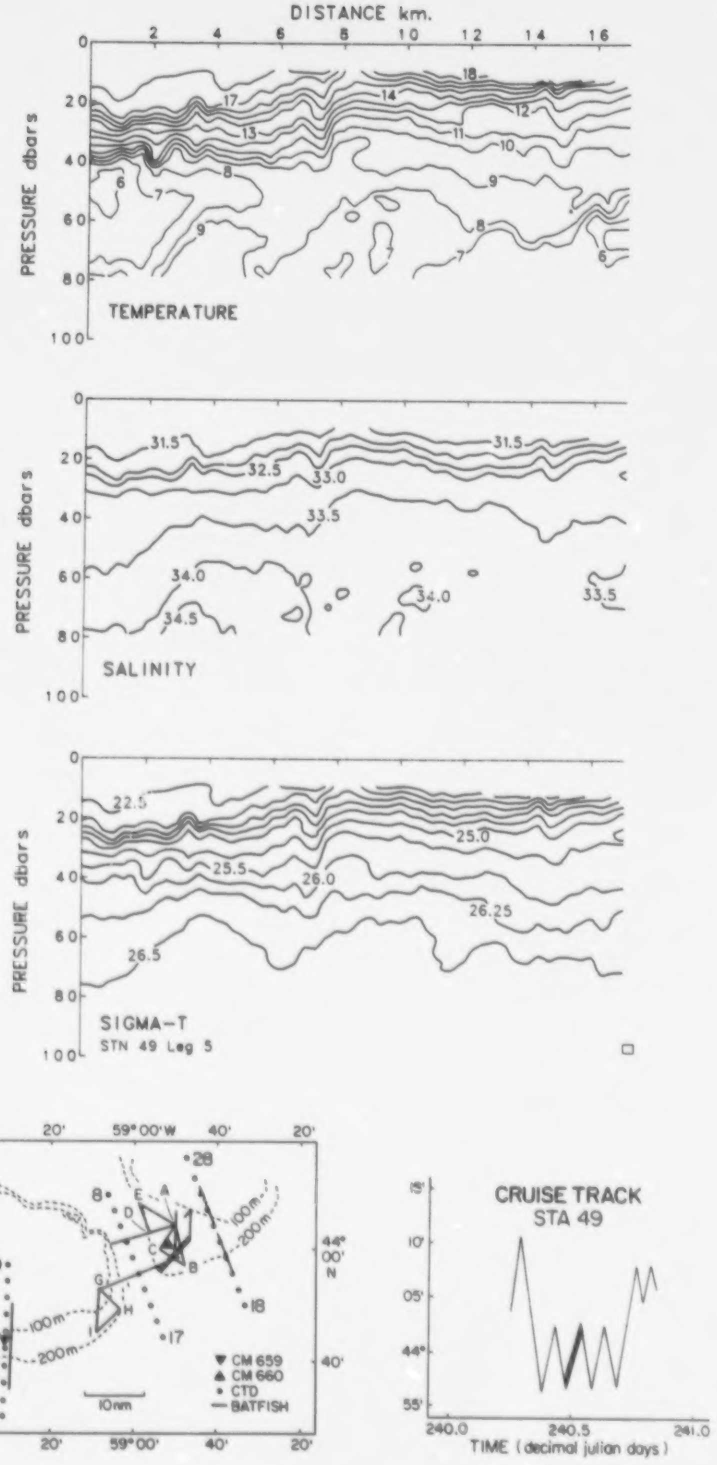
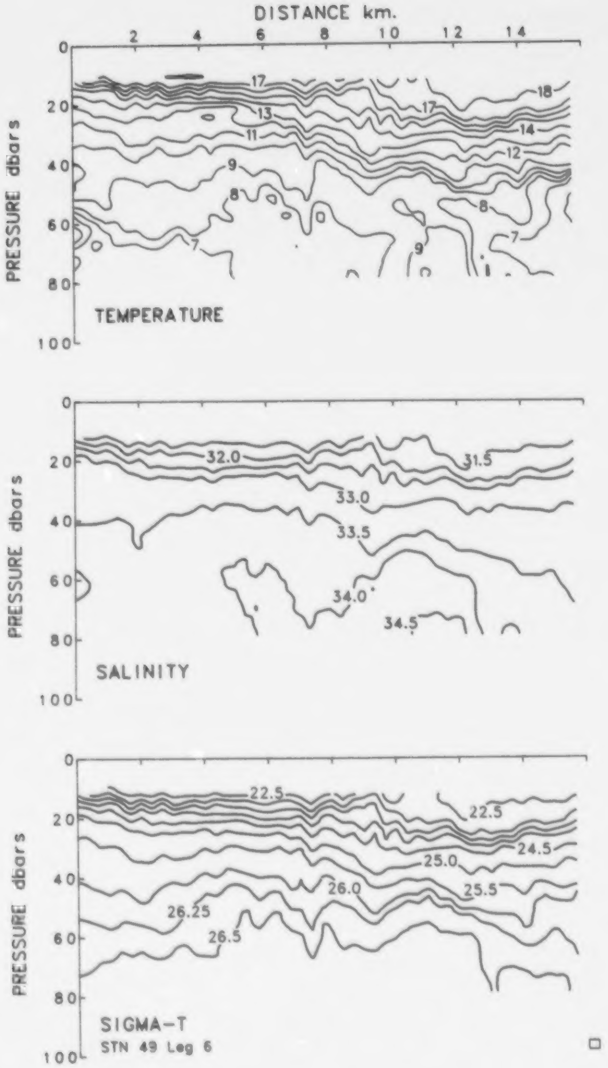
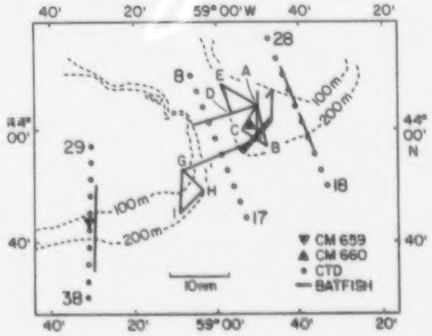

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 49 Leg 5
59° 00' W
44° 00'
44° 00' N
100m
200m
CM 659
CM 660
CTD
BATFISH
10nm
CRUISE TRACK
STA 49
TIME (decimal julian days)

Fig. 147


DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 49 Leg 6


59°00'W
CM 659
CM 660
CTD
BATFISH
100m
200m

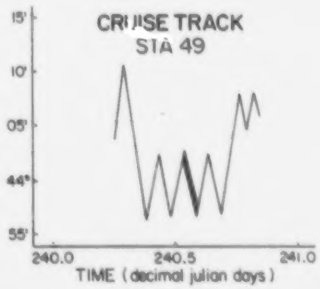

CRUISE TRACK
STA 49
TIME (decimal julian days)

Fig. 148

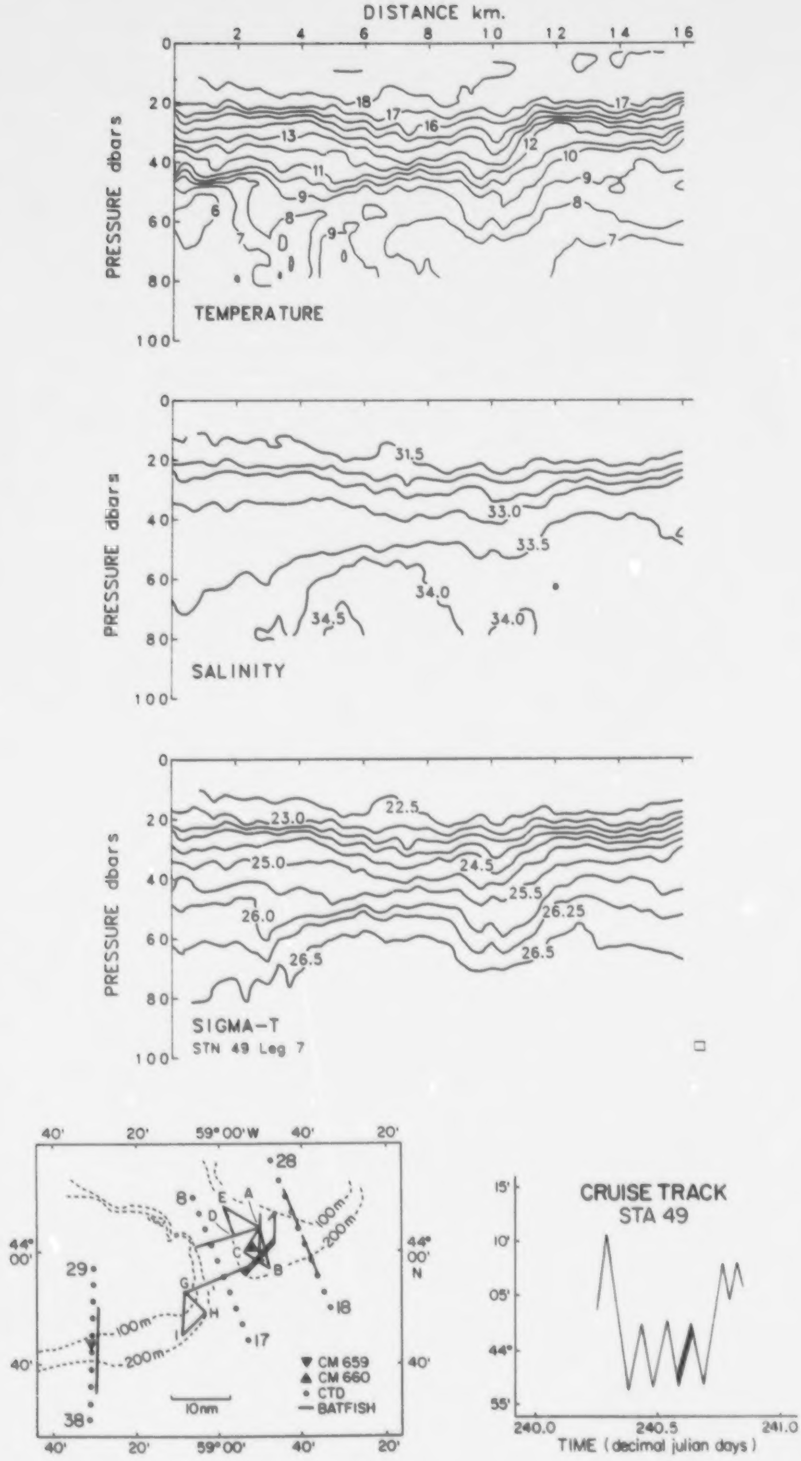

DISTANCE km.
2 4 6 8 10 12 14 16
PRESSURE dbars
0 20 40 60 80 100
TEMPERATURE
18 17 16 13 12 11 10 9 8 7 6
SALINITY
31.5 33.0 33.5 34.0 34.5
SIGMA-T
STN 49 Leg 7
23.0 22.5 25.0 24.5 25.5 26.0 26.25 26.5
40' 20' 59°00'W 40' 20'
44° 00' N
40'
28 8 29 18 17 38
A B C D E G H I
100m 200m
10nm
CM 659
CM 660
CTD
BATFISH
CRUISE TRACK
STA 49
15' 10' 05' 44° 55'
240.0 240.5 241.0
TIME (decimal julian days)

Fig. 149

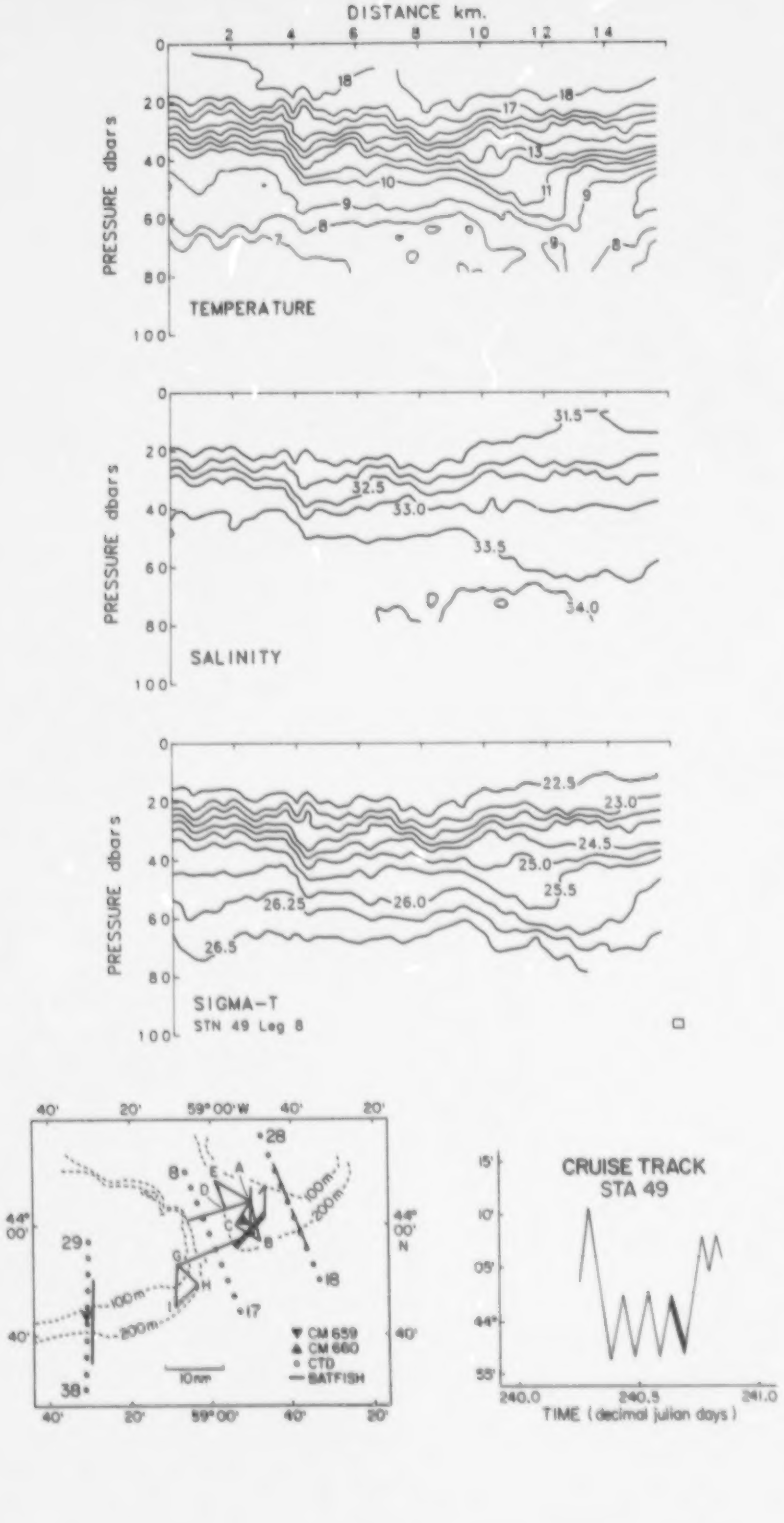

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 49 Leg 8
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 49
TIME (decimal julian days)

Fig. 150

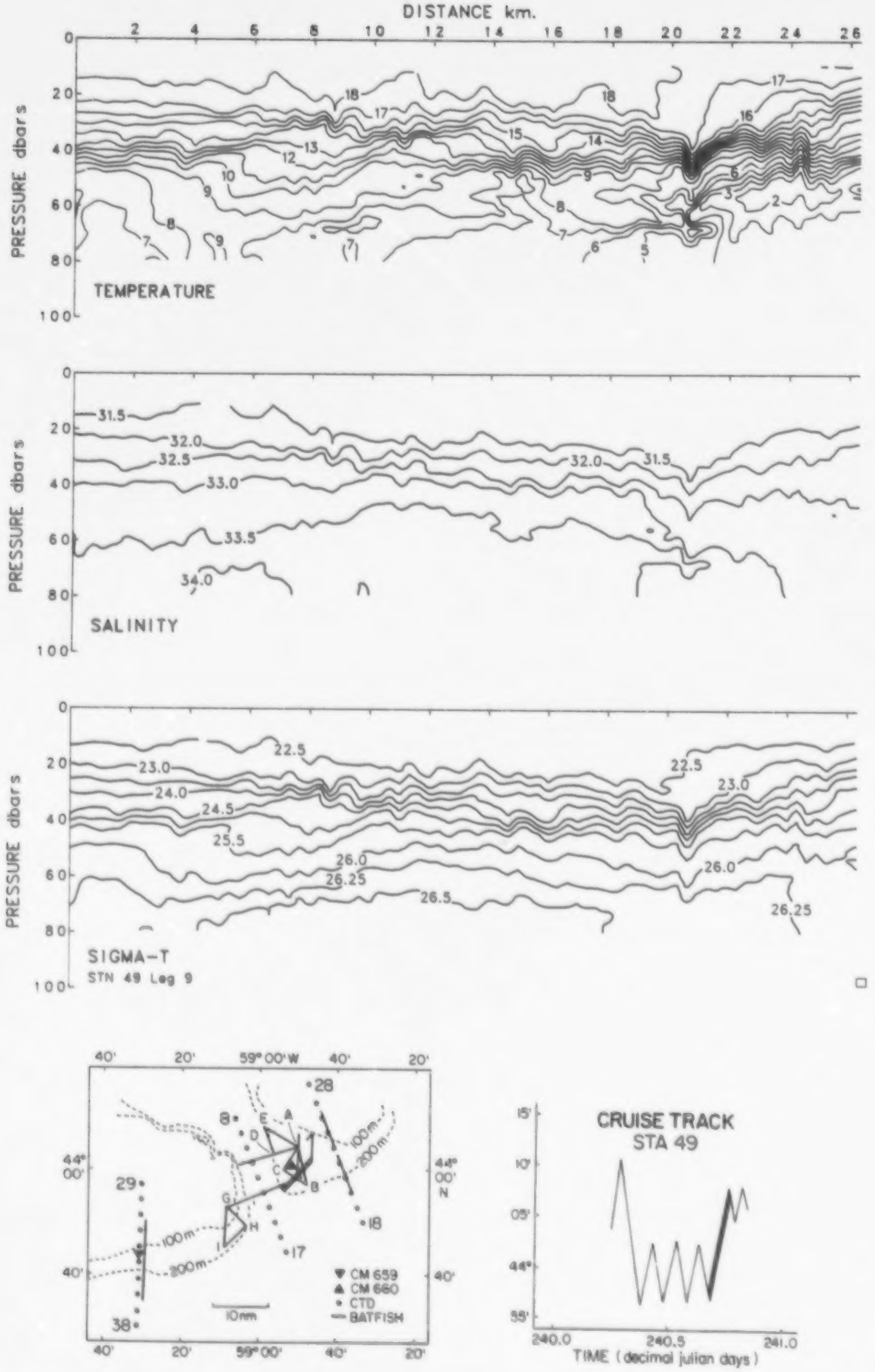

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 49 Leg 9
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 49
TIME (decimal julian days)

Fig. 151

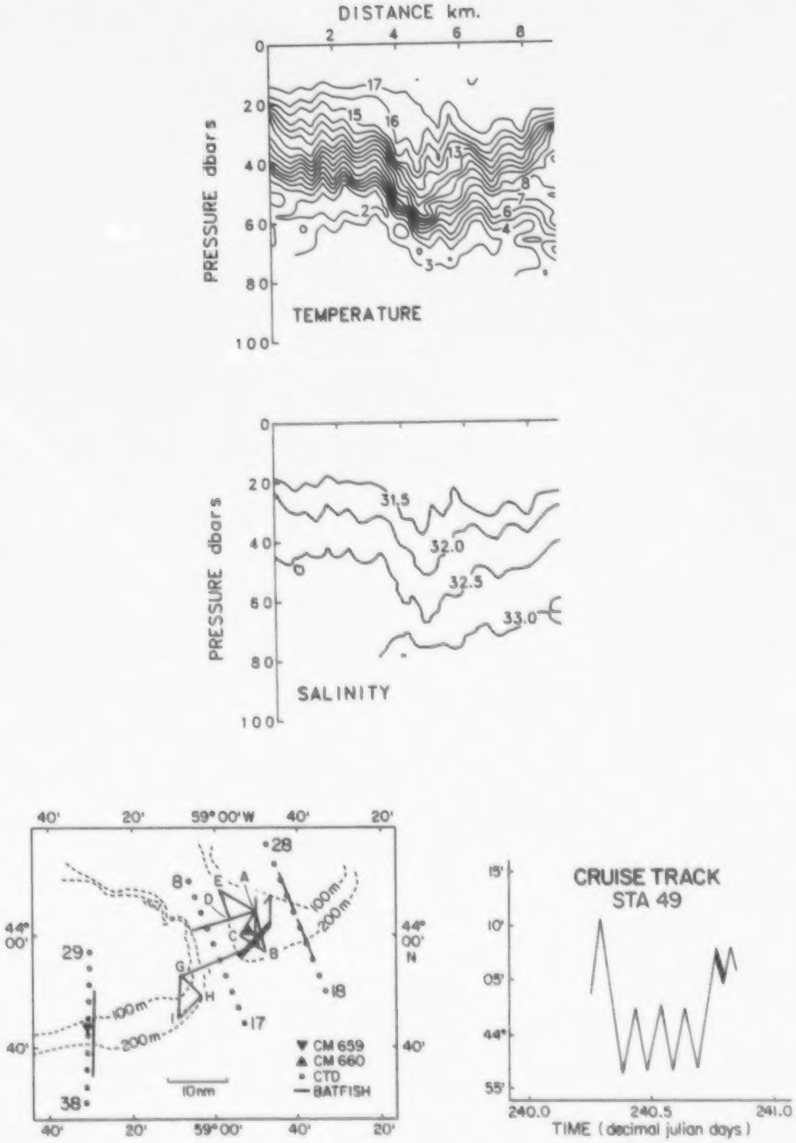

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
31.5
32.0
32.5
33.0
59° 00' W
44° 00' N
100m
200m
CM 659
CM 660
CTD
BATFISH
10nm
CRUISE TRACK
STA 49
TIME (decimal julian days)

Fig. 152

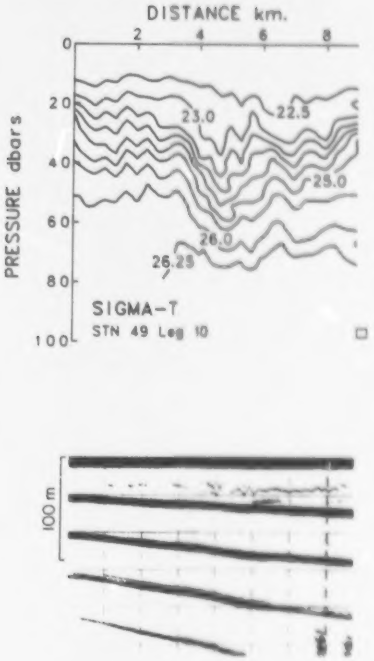

DISTANCE km.
2
4
6
8
0
20
40
60
80
100
PRESSURE dbars
23.0
22.5
25.0
26.0
26.25
SIGMA-T
STN 49 Leg 10
100 m

Fig. 153

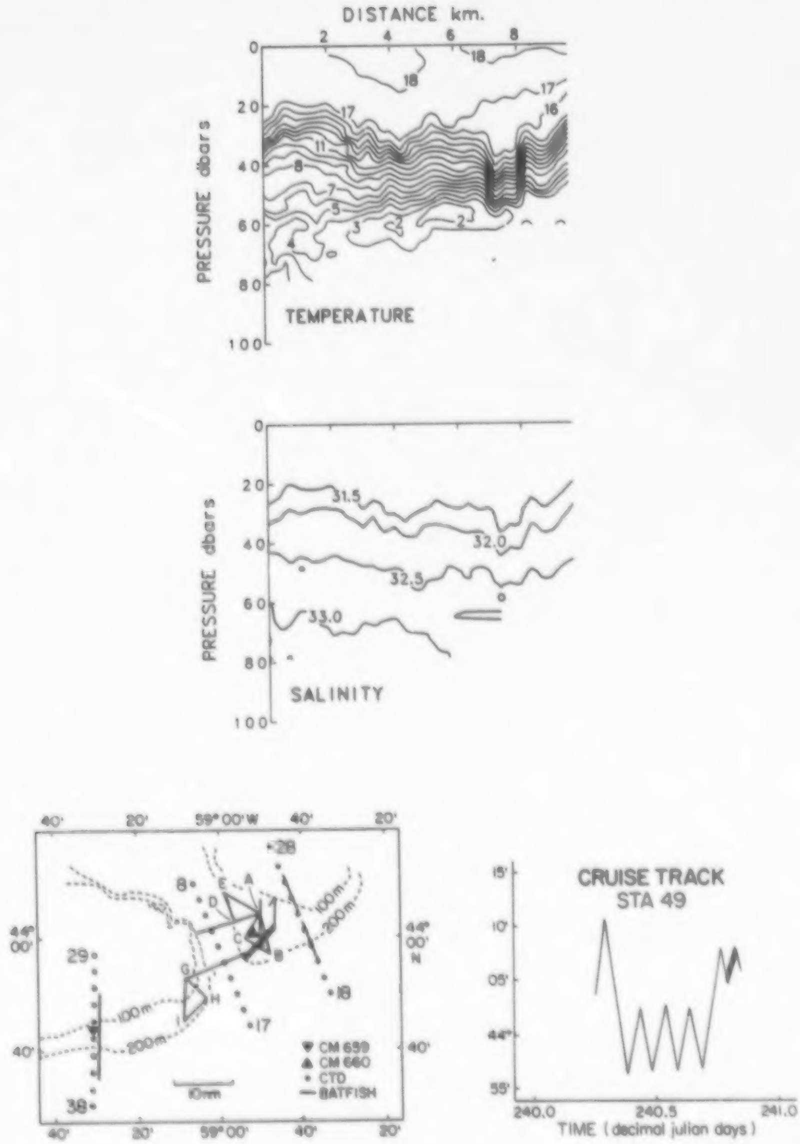
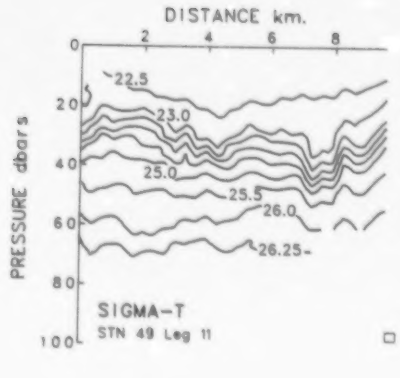

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
31.5
32.0
32.5
33.0
59° 00' W
44° 00' N
100m
200m
CM 659
CM 660
CTD
BATFISH
10nm
CRUISE TRACK
STA 49
TIME (decimal julian days)

Fig. 154


DISTANCE km.
2
4
6
8
0
20
40
60
80
100
PRESSURE dbars
22.5
23.0
25.0
25.5
26.0
26.25
SIGMA-T
STN 49 Leg 11

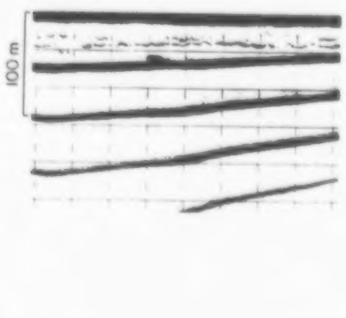

100 m

Fig. 155

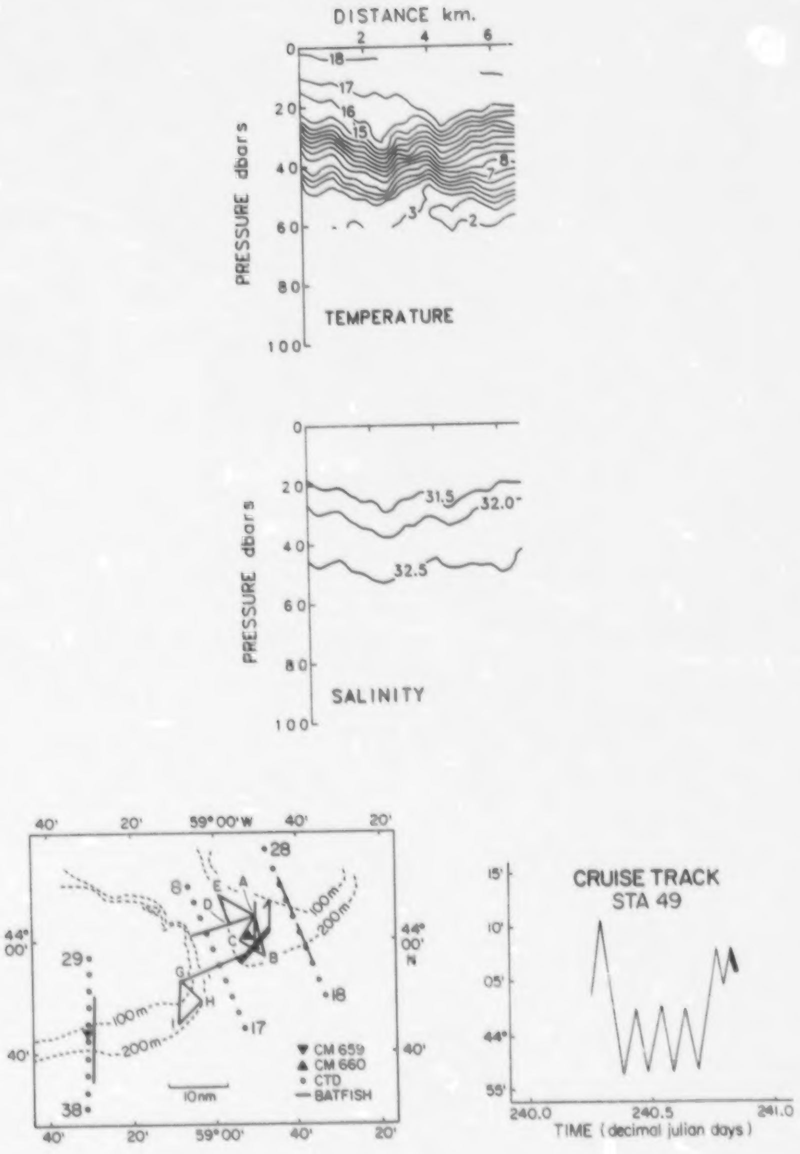

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
31.5
32.0
32.5
59° 00' W
44° 00' N
100m
200m
CM 659
CM 660
CTD
BATFISH
10nm
CRUISE TRACK
STA 49
TIME (decimal julian days)

Fig. 156

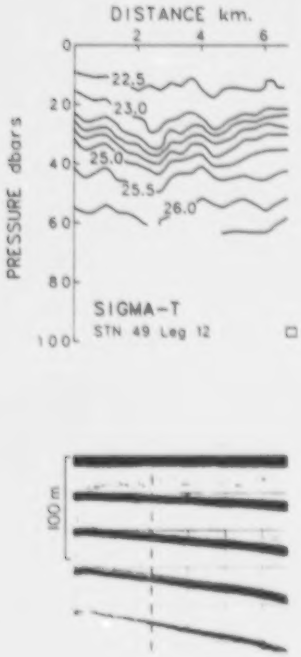

DISTANCE km.
2
4
6
0
20
40
60
80
100
PRESSURE dbars
22.5
23.0
25.0
25.5
26.0
SIGMA-T
STN 49 Leg 12
100 m

Fig. 157

Figures 158-174.

BATFISH station 50: 17 sections of Temperature, Salinity and Sigma-t vs. pressure, location map and latitude vs. time plot.

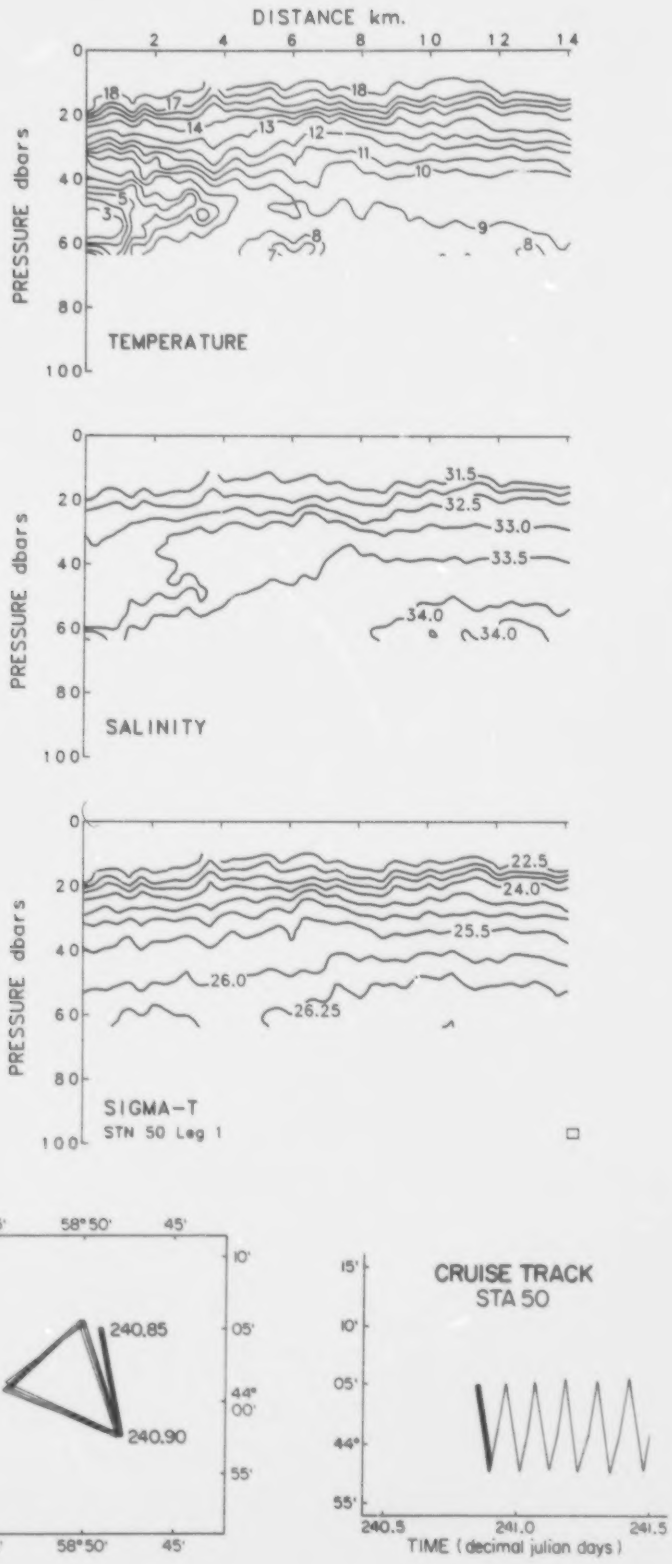

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 50 Leg 1
240.85
240.90
CRUISE TRACK
STA 50
TIME (decimal julian days)

Fig. 158

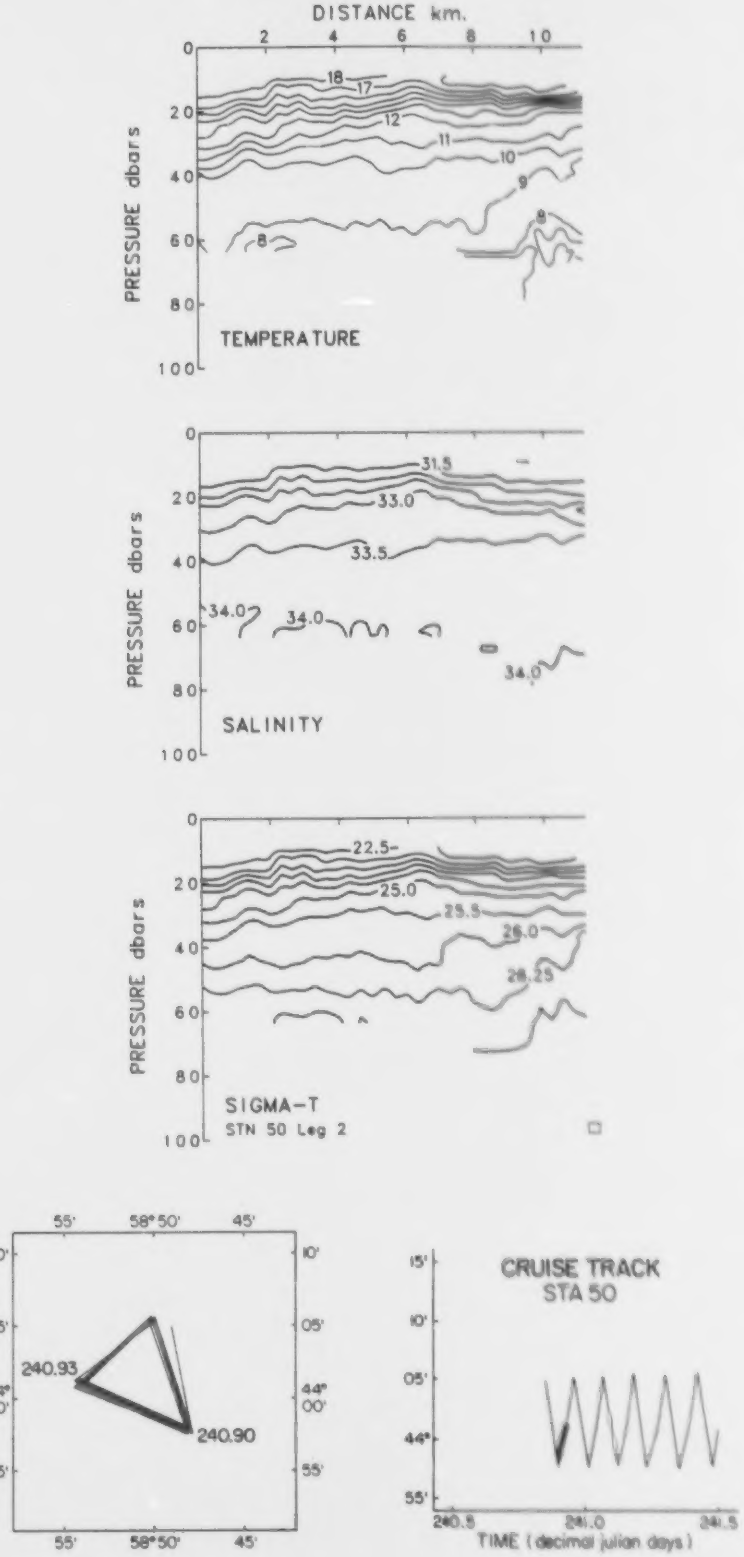

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 50 Leg 2
240.93
240.90
CRUISE TRACK
STA 50
TIME (decimal julian days)

Fig. 159

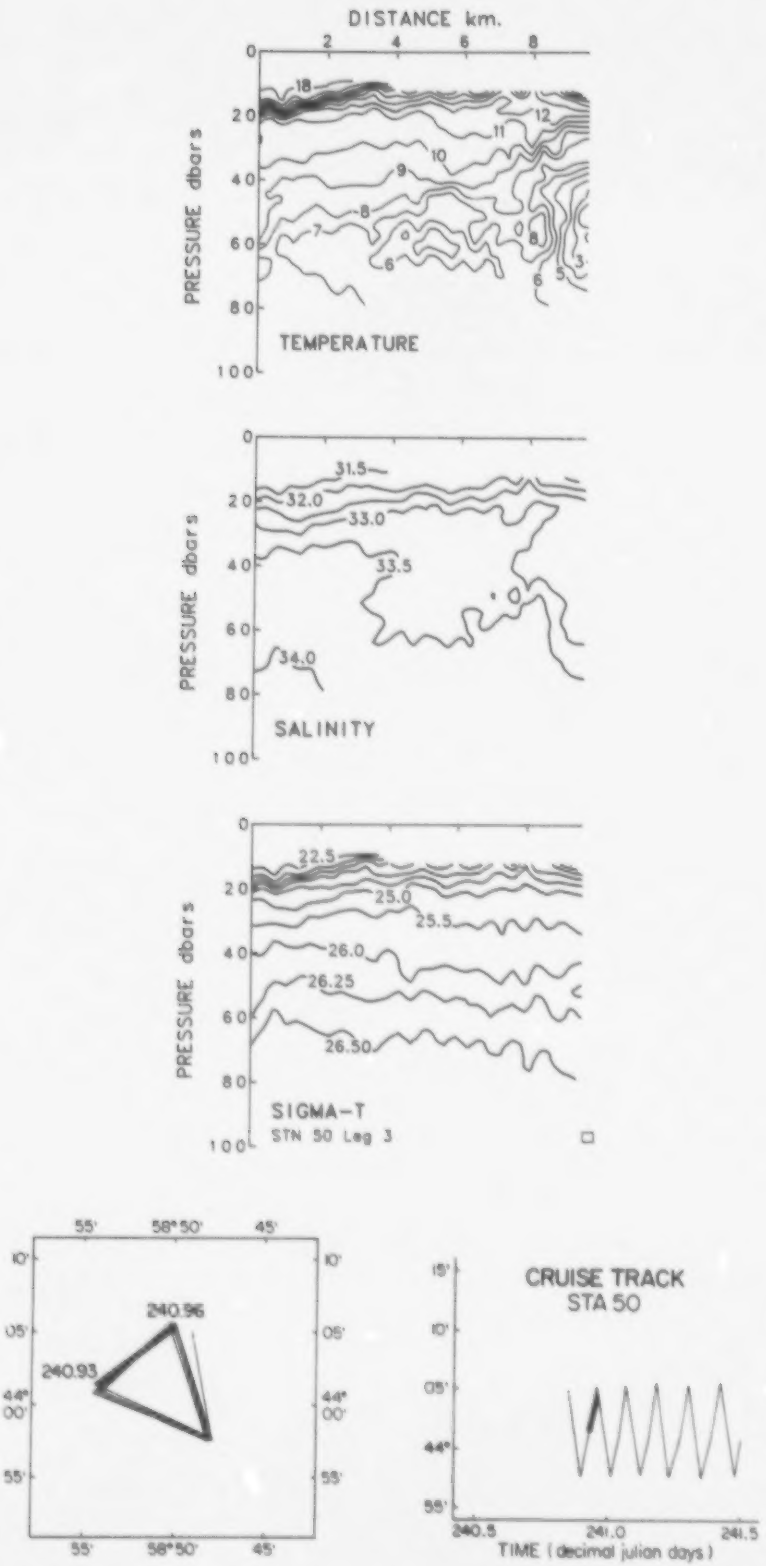
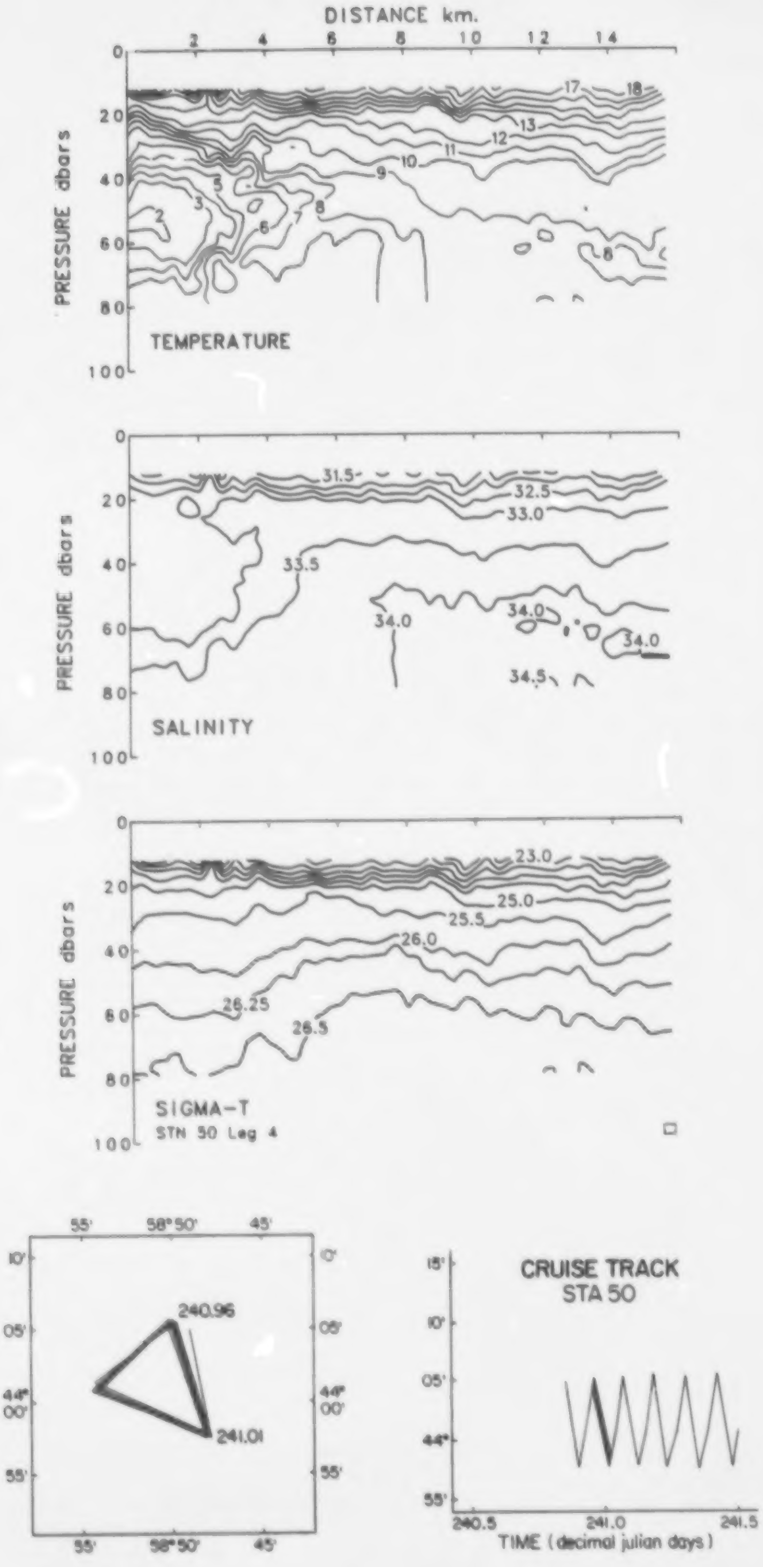

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 50 Leg 3
240.96
240.93
58°50'
CRUISE TRACK
STA 50
TIME (decimal julian days)

Fig. 160



DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 50 Leg 4
CRUISE TRACK
STA 50
240.96
241.01
TIME (decimal julian days)

Fig. 161

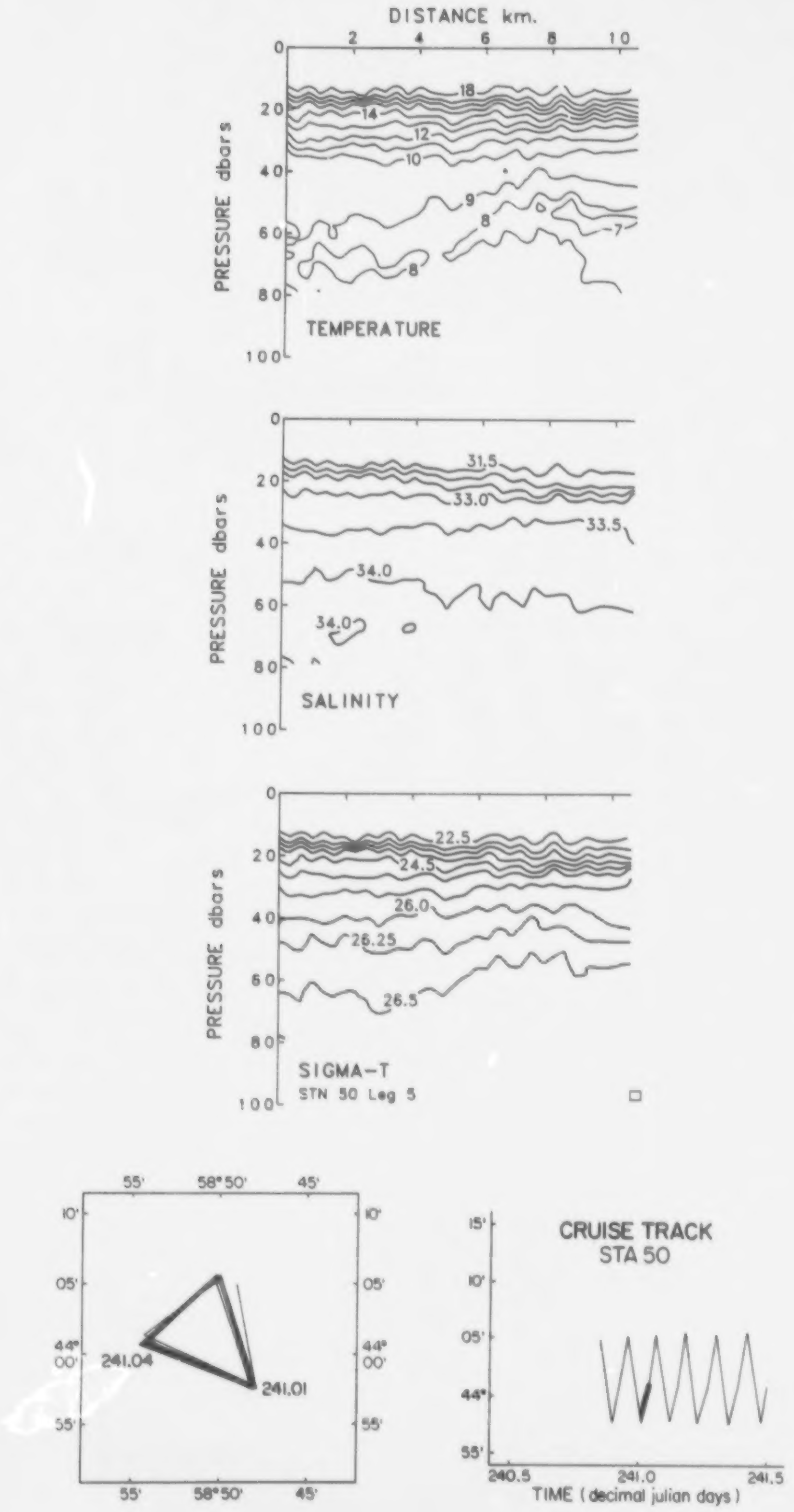

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 50 Leg 5
241.04
241.01
58°50'
CRUISE TRACK
STA 50
TIME (decimal julian days)

Fig. 162

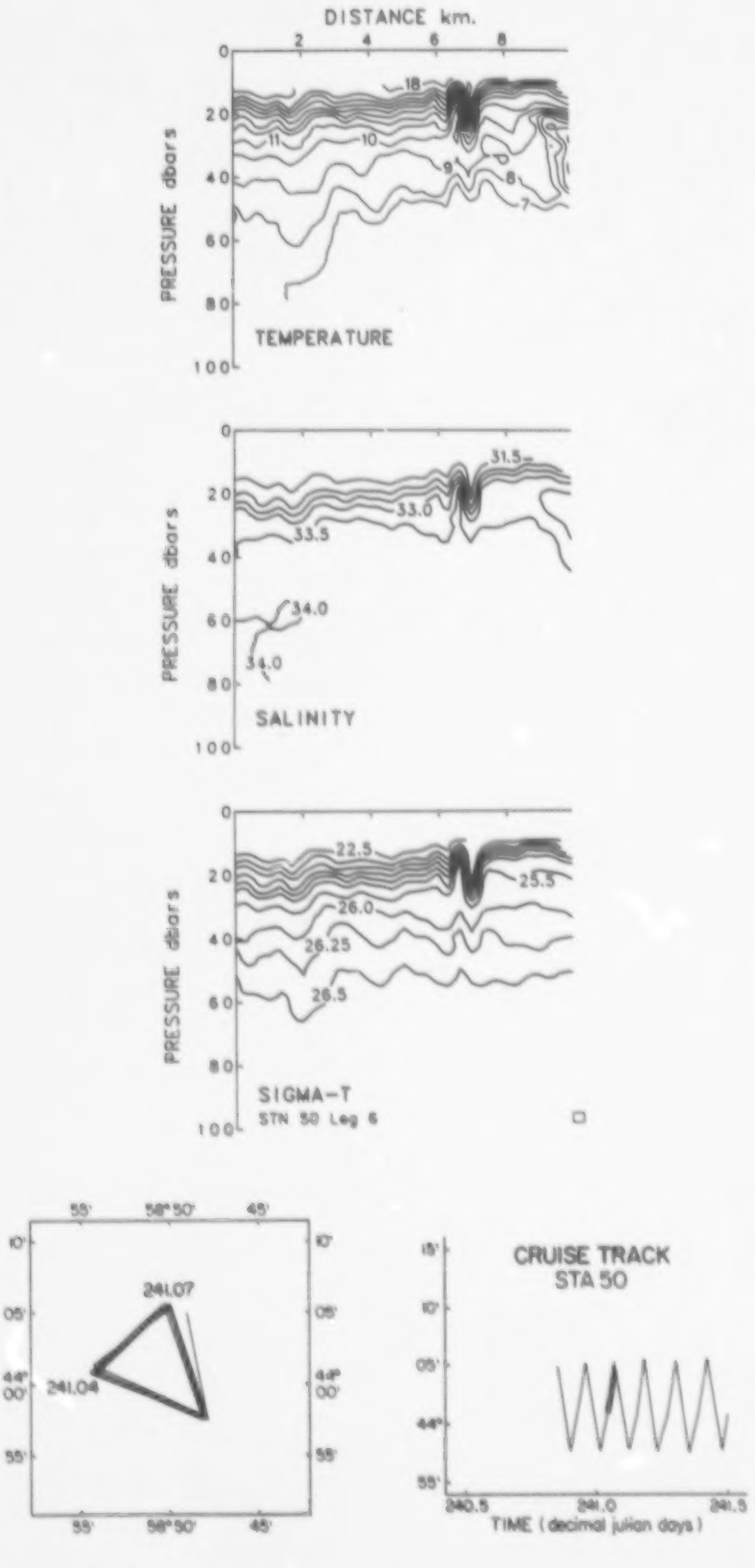

DISTANCE km.
2
4
6
8
0
20
40
60
80
100
PRESSURE dbars
18
11
10
9
8
7
TEMPERATURE
31.5
33.0
33.5
34.0
34.0
SALINITY
22.5
25.5
26.0
26.25
26.5
SIGMA-T
STN 50 Leg 6
55'
58°50'
45'
10'
05'
44°
00'
55'
241.07
241.04
CRUISE TRACK
STA 50
15'
240.5
241.0
241.5
TIME (decimal julian days)

Fig. 163

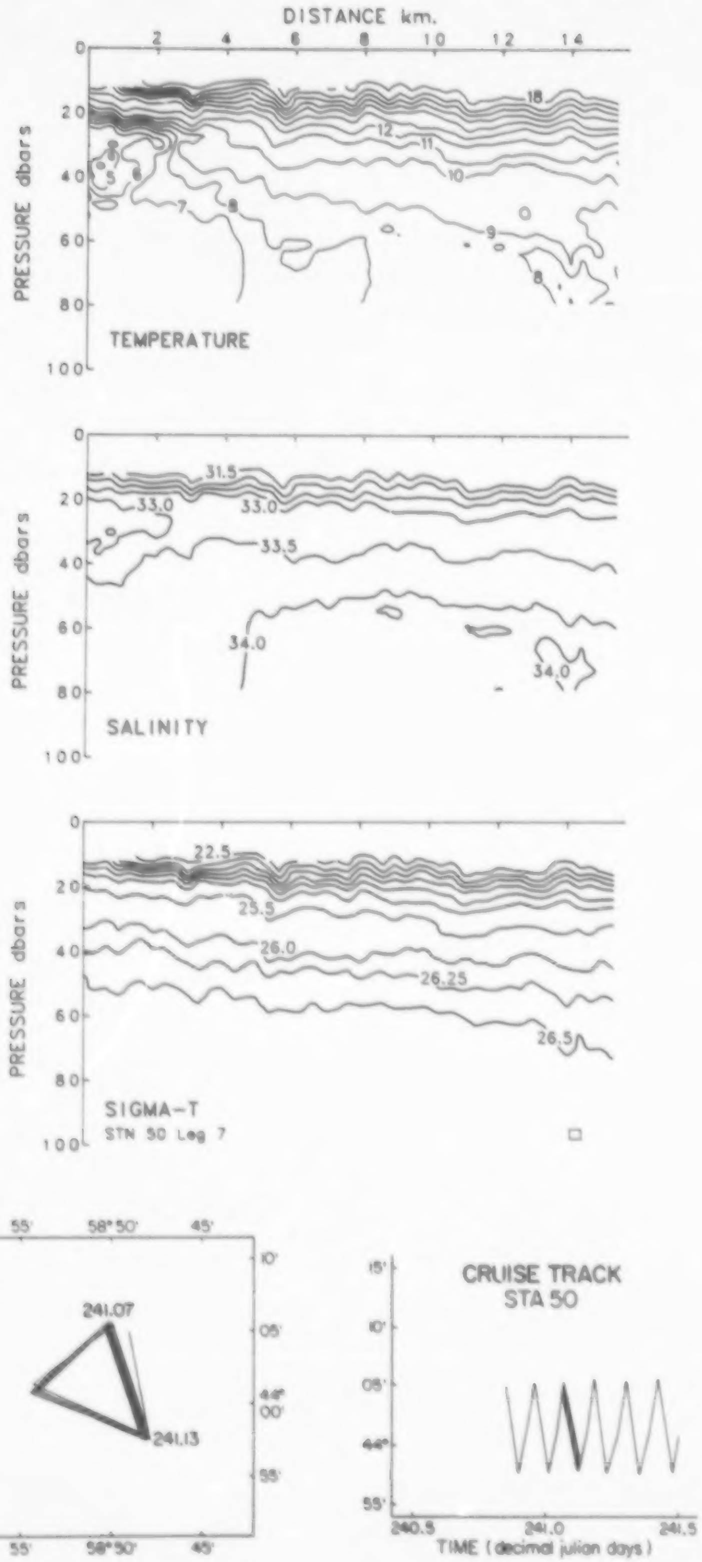

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 50 Leg 7
241.07
241.13
CRUISE TRACK
STA 50
TIME (decimal julian days)

Fig. 164

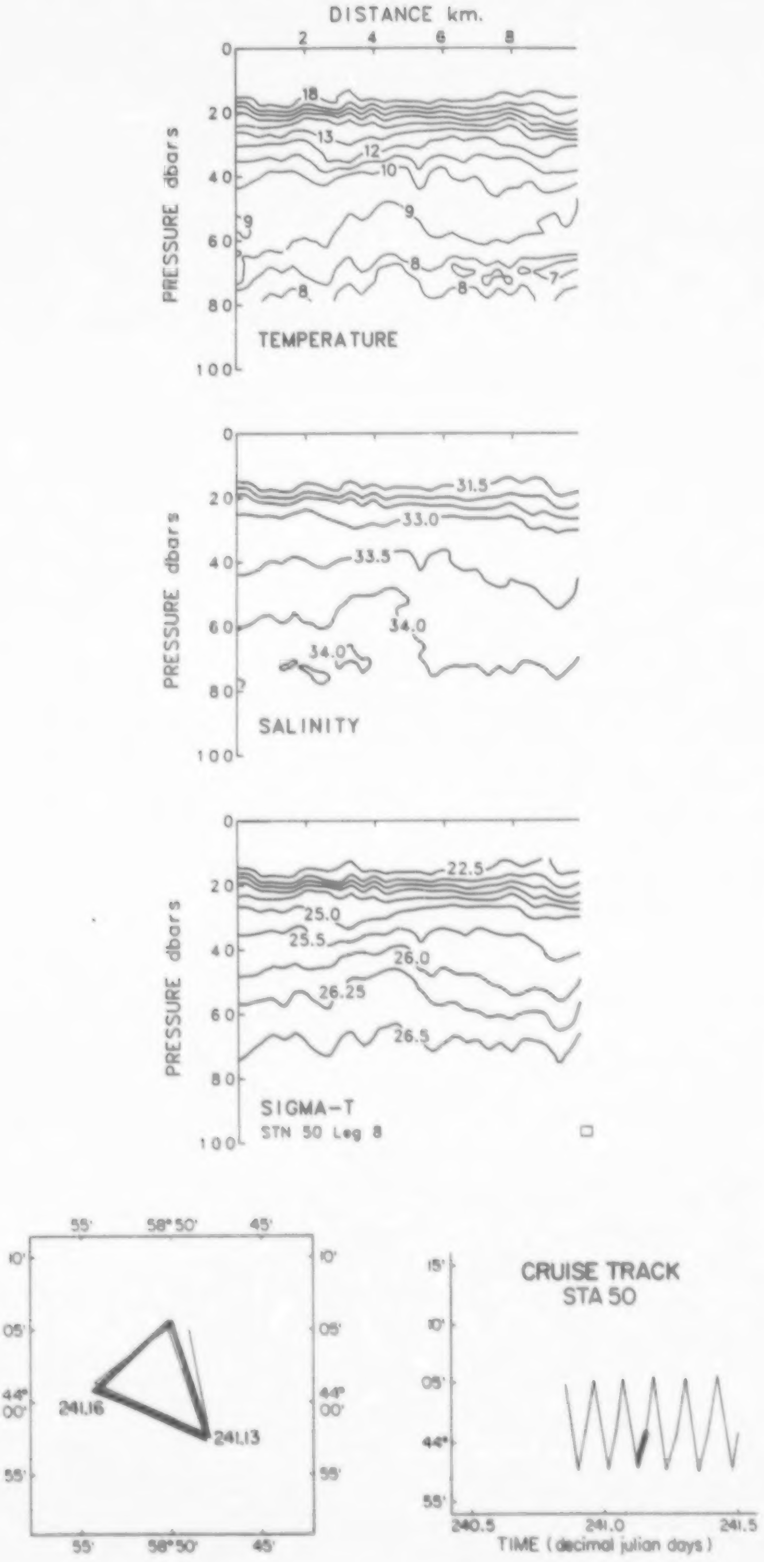

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 50 Leg 8
18
13
12
10
9
8
7
31.5
33.0
33.5
34.0
22.5
25.0
25.5
26.0
26.25
26.5
55'
58°50'
45'
10'
05'
44° 00'
241.16
241.13
CRUISE TRACK
STA 50
15'
240.5
241.0
241.5
TIME (decimal julian days)

Fig. 165

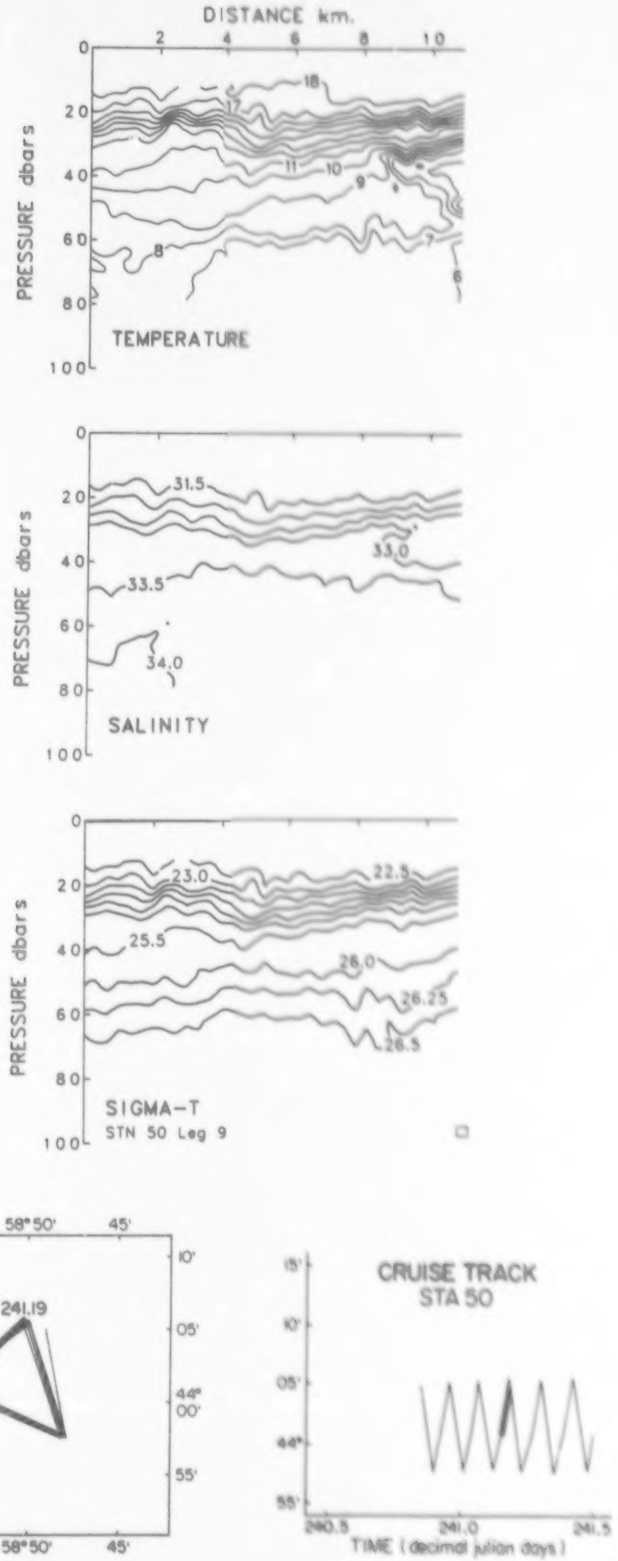

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 50 Leg 9
241.19
241.16
58°50'
55'
45'
44° 00'
CRUISE TRACK
STA 50
TIME (decimal julian days)
240.5
241.0
241.5

Fig. 166

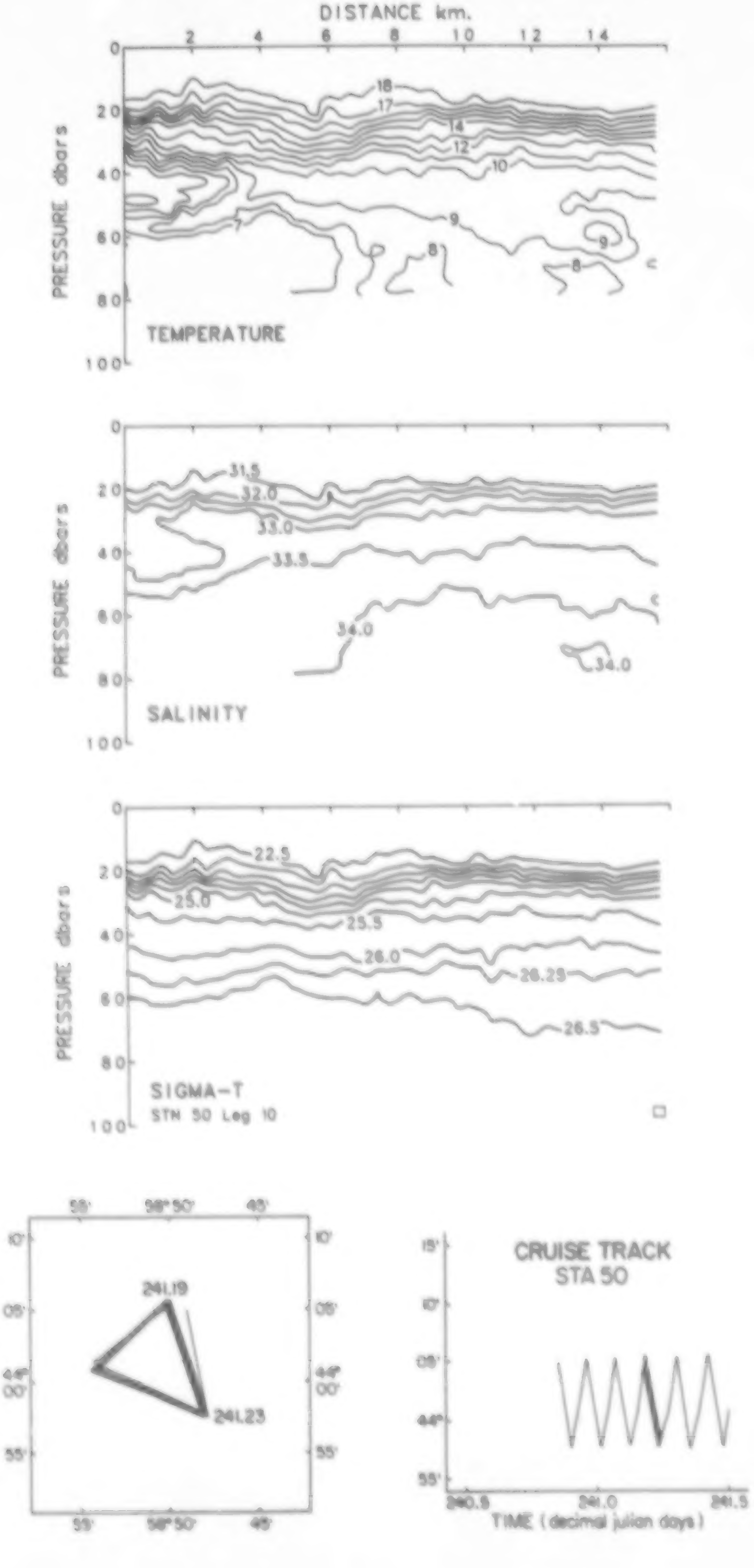

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 50 Leg 10
CRUISE TRACK
STA 50
241.19
241.23
TIME (decimal julian days)

Fig. 167

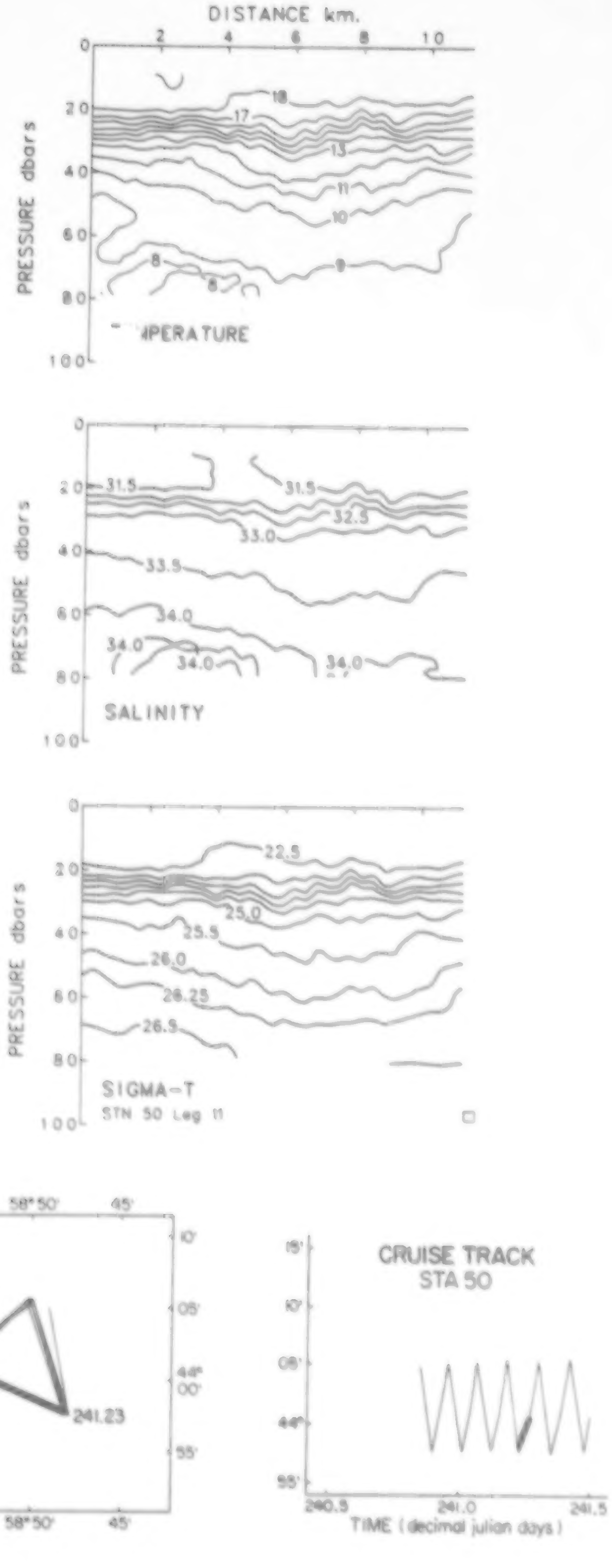

DISTANCE km.
PRESSURE dbars
SALINITY
SIGMA-T
STN 50 Leg 11
241.27
241.23
CRUISE TRACK
STA 50
TIME (decimal julian days)

Fig. 168

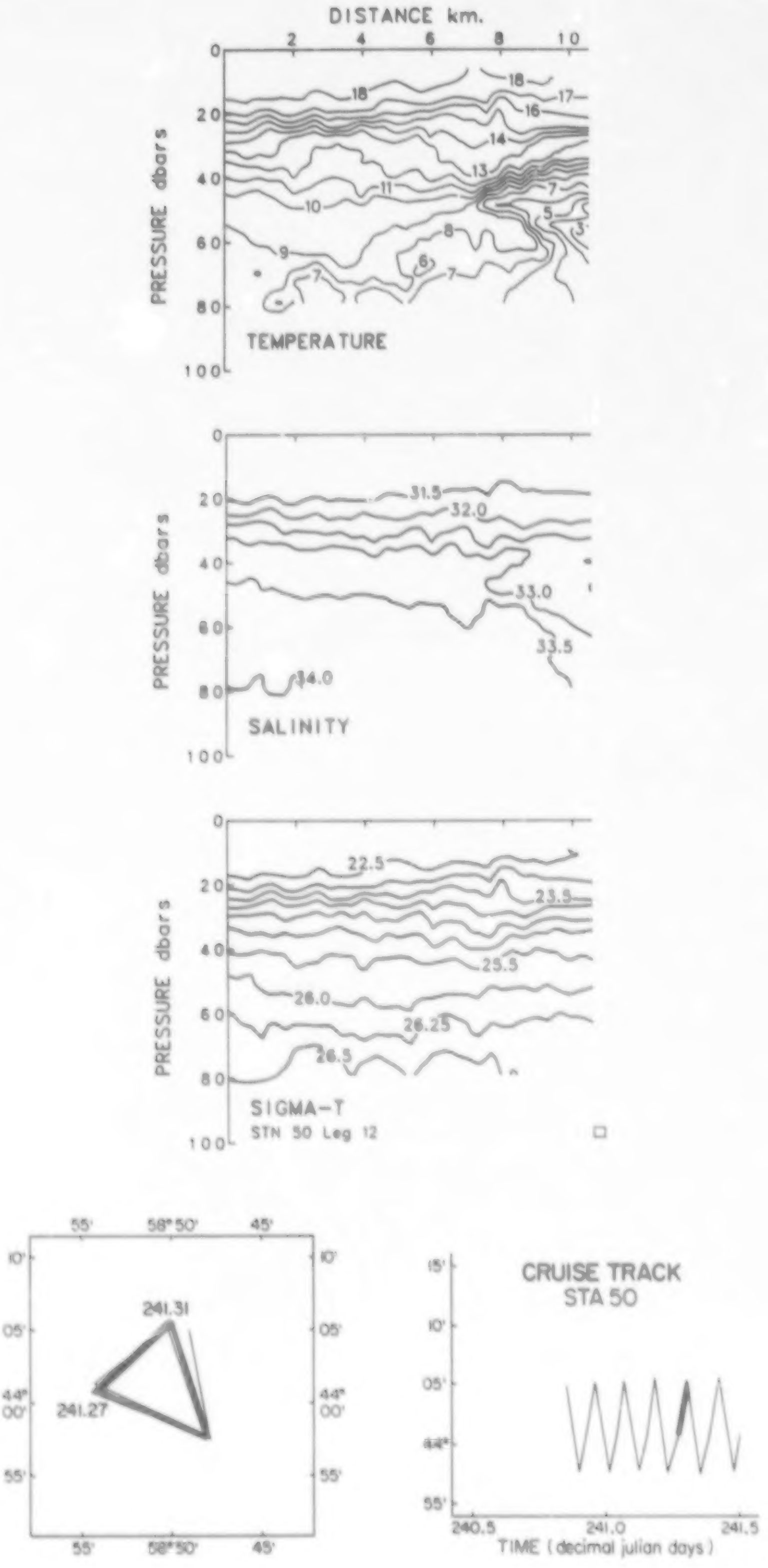
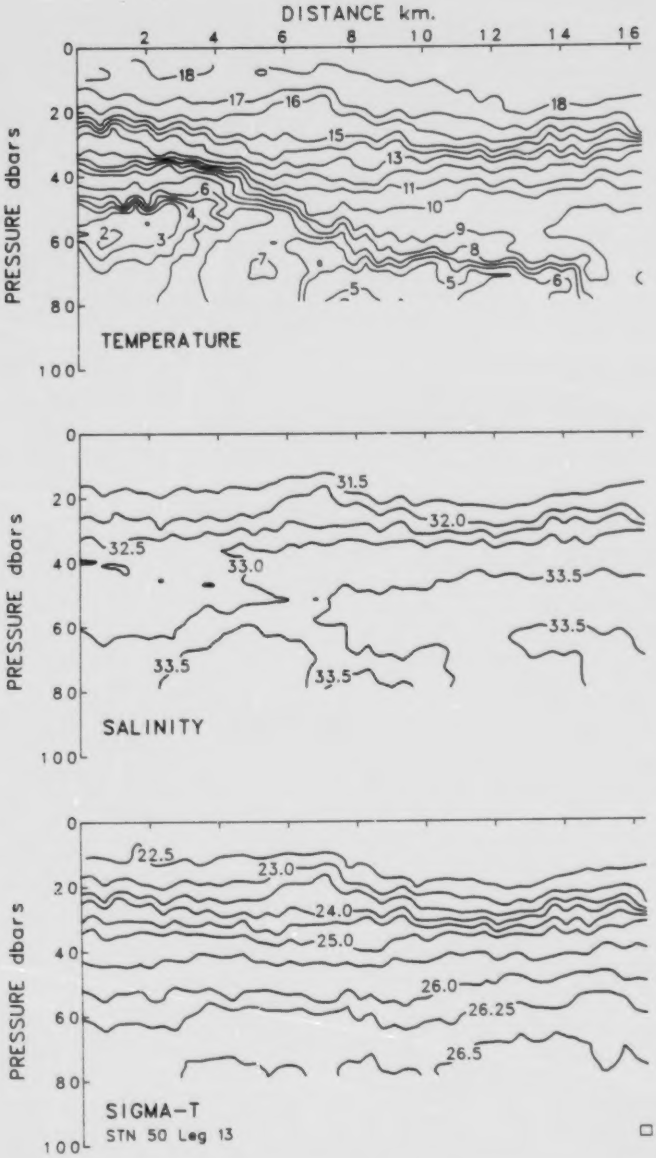

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 50 Leg 12
CRUISE TRACK
STA 50
241.31
241.27
TIME (decimal julian days)

Fig. 169


DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
PRESSURE dbars
SIGMA-T
STN 50 Leg 13

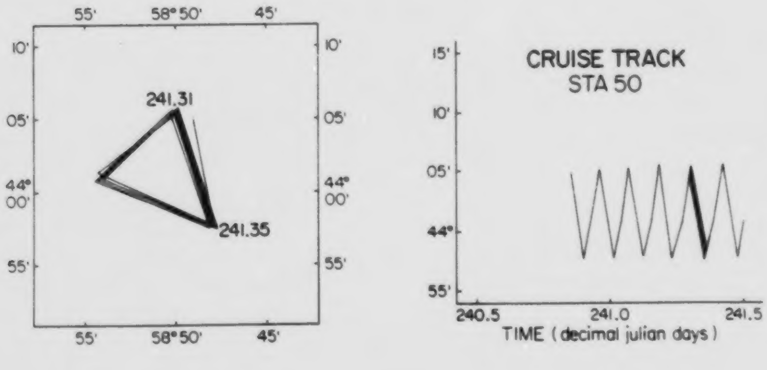

241.31
241.35
CRUISE TRACK
STA 50
TIME (decimal julian days)

Fig. 170

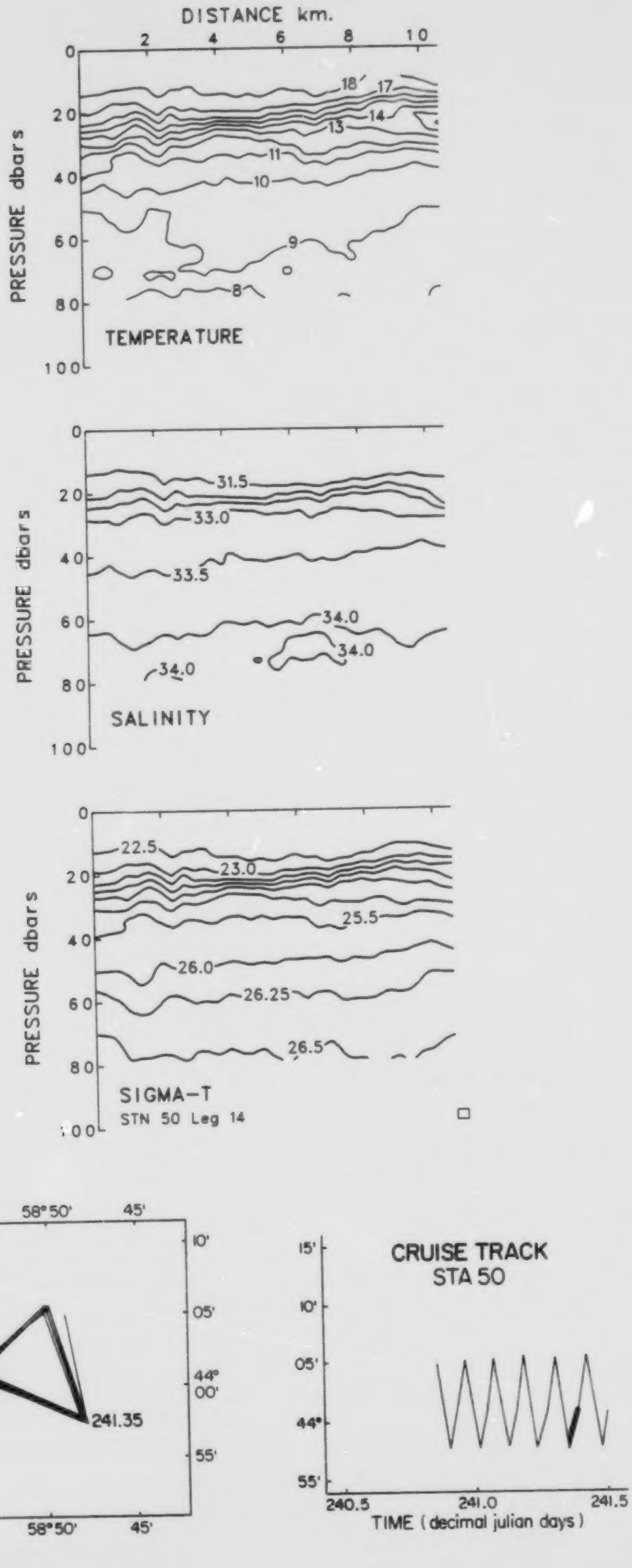

DISTANCE km.
2
4
6
8
10
PRESSURE dbars
0
20
40
60
80
100
18
17
14
13
11
10
9
8
TEMPERATURE
31.5
33.0
33.5
34.0
34.0
34.0
SALINITY
22.5
23.0
25.5
26.0
26.25
26.5
SIGMA-T
STN 50 Leg 14
55'
58°50'
45'
10'
05'
44°
00'
55'
241.39
241.35
CRUISE TRACK
STA 50
15'
240.5
241.0
241.5
TIME (decimal julian days)

Fig. 171

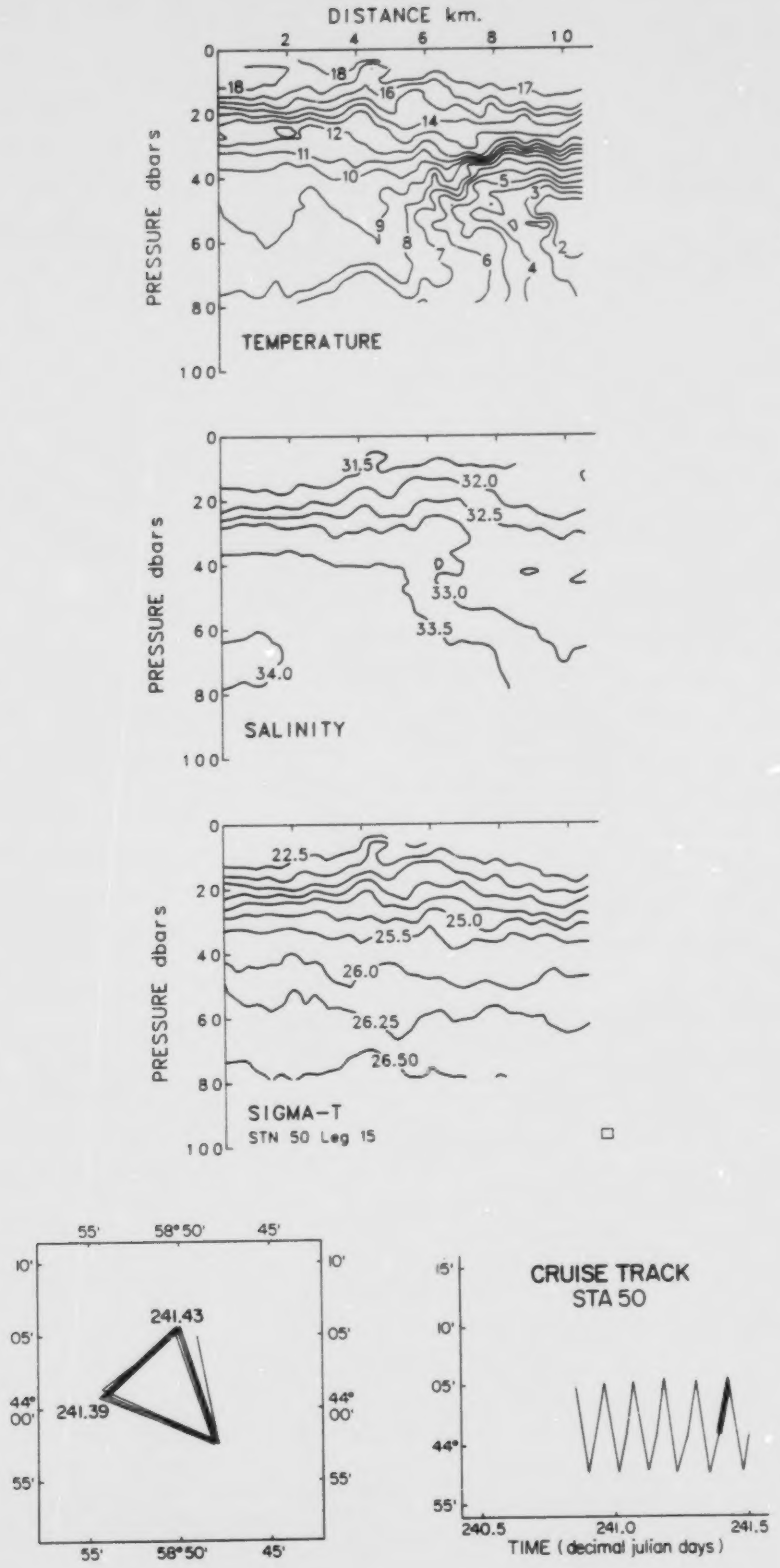

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 50 Leg 15
CRUISE TRACK
STA 50
241.43
241.39
TIME (decimal julian days)

Fig. 172

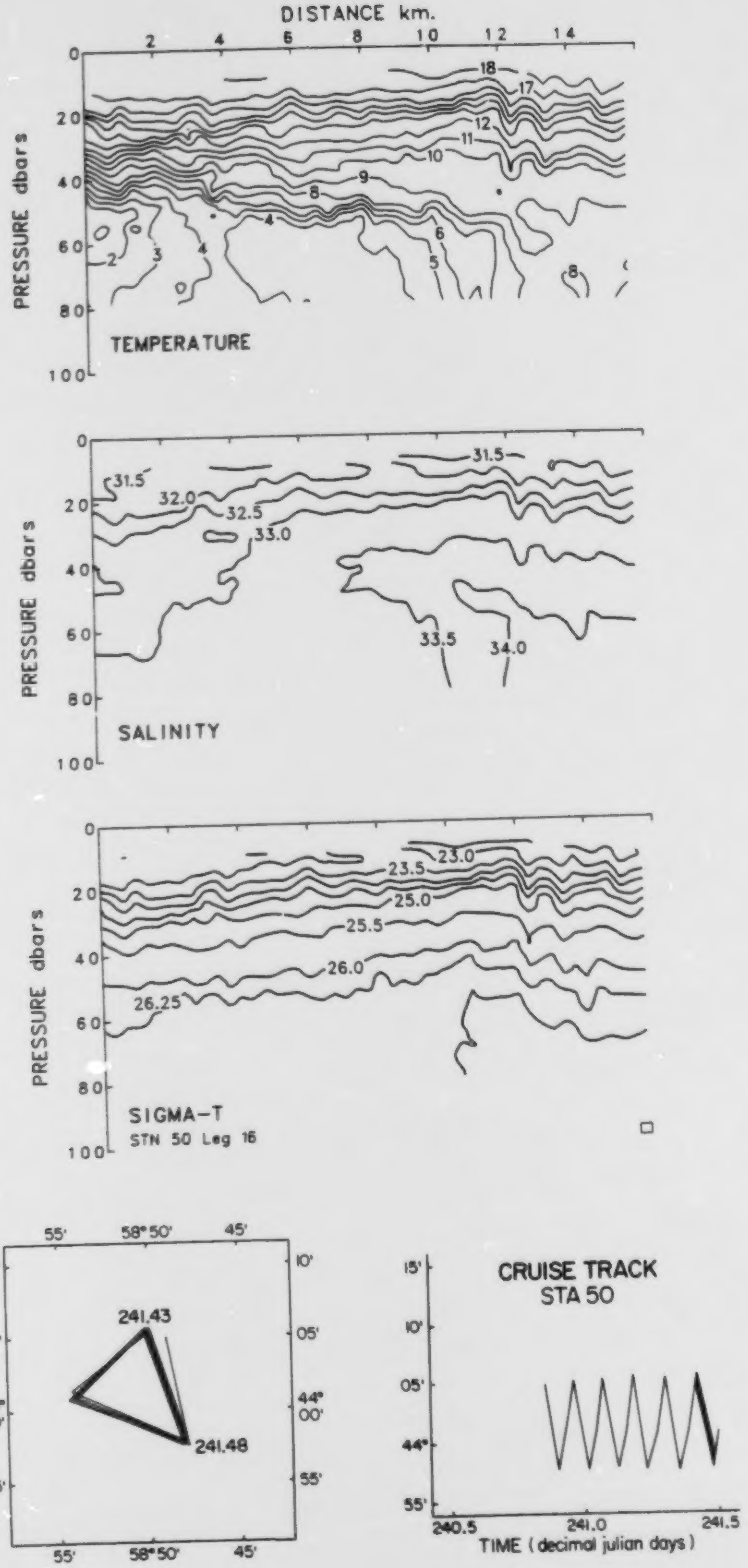

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 50 Leg 16
CRUISE TRACK
STA 50
241.43
241.48
58°50'
44° 00'
TIME (decimal julian days)
240.5
241.0
241.5

Fig. 173

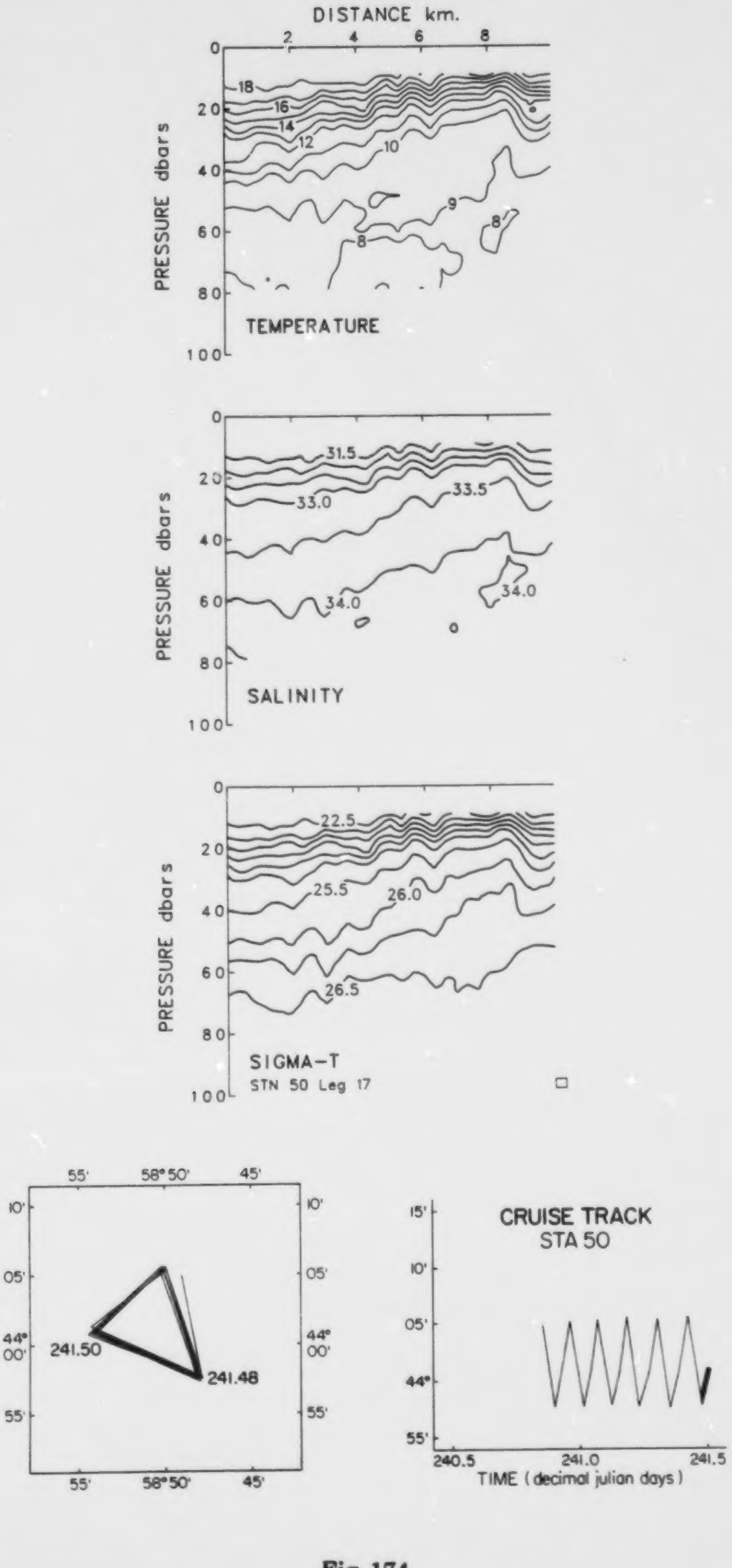

DISTANCE km.
2
4
6
8
0
20
40
60
80
100
PRESSURE dbars
18
16
14
12
10
9
8
8
TEMPERATURE
31.5
33.0
33.5
34.0
34.0
SALINITY
22.5
25.5
26.0
26.5
SIGMA-T
STN 50 Leg 17
55'
58°50'
45'
10'
05'
44°
00'
55'
241.50
241.48
CRUISE TRACK
STA 50
15'
240.5
241.0
241.5
TIME (decimal julian days)

Fig. 174

Figures 175-188.

BATFISH station 51: 9 sections of Temperature, Salinity and Sigma-t vs. pressure, location map and longitude vs. time plot. Acoustic backscatter plots for selected sections.

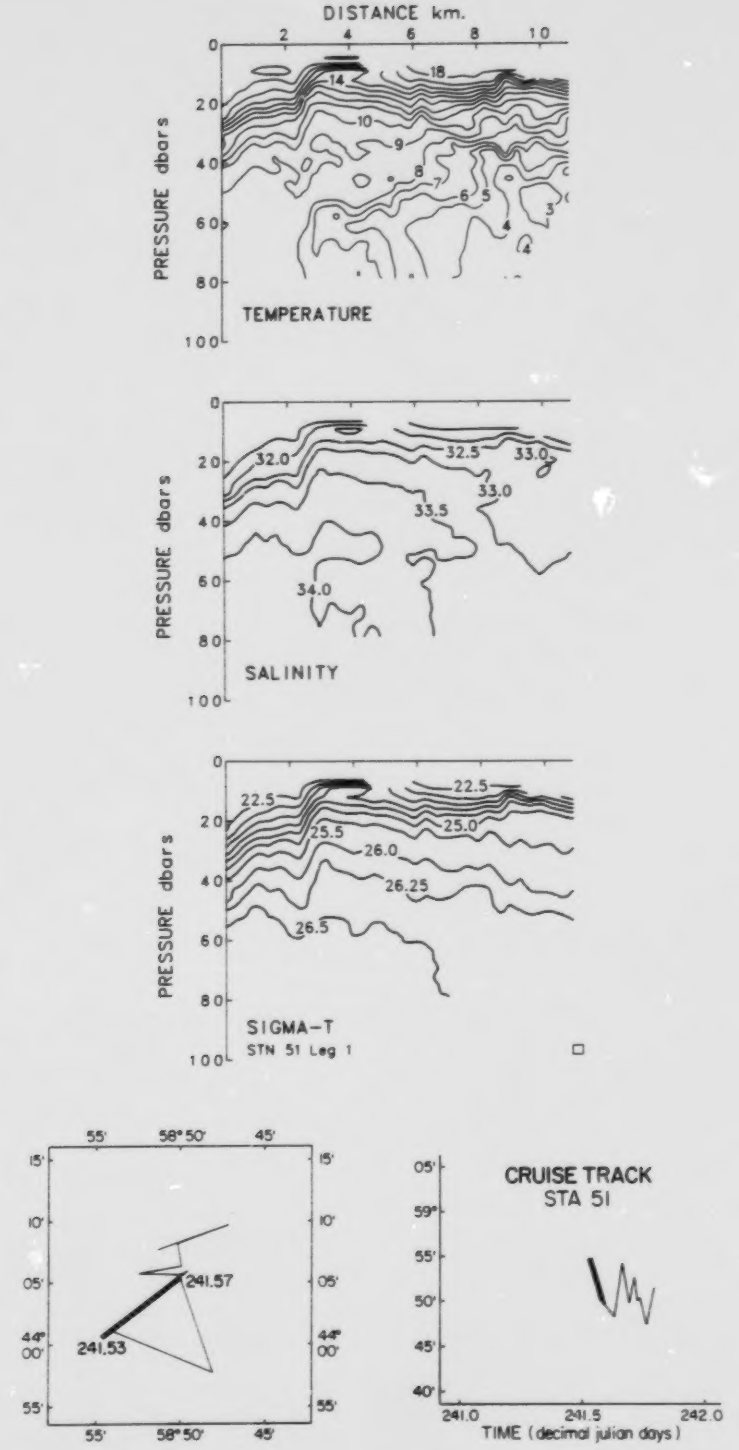

DISTANCE km.
2
4
6
8
10
0
20
40
60
80
100
PRESSURE dbars
18
14
10
9
8
7
6
5
4
3
TEMPERATURE
32.0
32.5
33.0
33.0
33.5
34.0
SALINITY
22.5
22.5
25.5
25.0
26.0
26.25
26.5
SIGMA-T
STN 51 Leg 1
55'
58°50'
45'
15'
10'
05'
44° 00'
55'
241.57
241.53
CRUISE TRACK
STA 51
05'
59°
55'
50'
45'
40'
241.0
241.5
242.0
TIME (decimal julian days)

Fig. 175

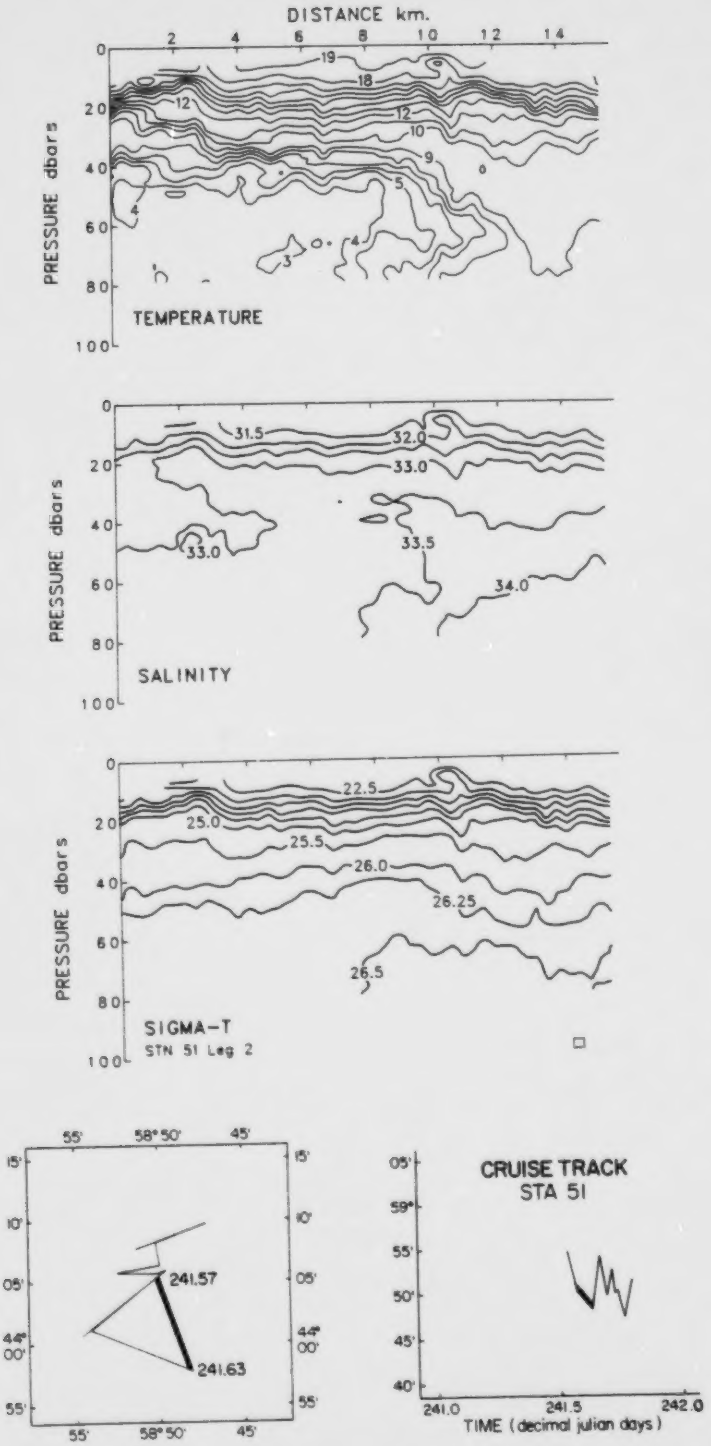

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 51 Leg 2
CRUISE TRACK
STA 51
241.57
241.63
TIME (decimal julian days)

Fig. 176

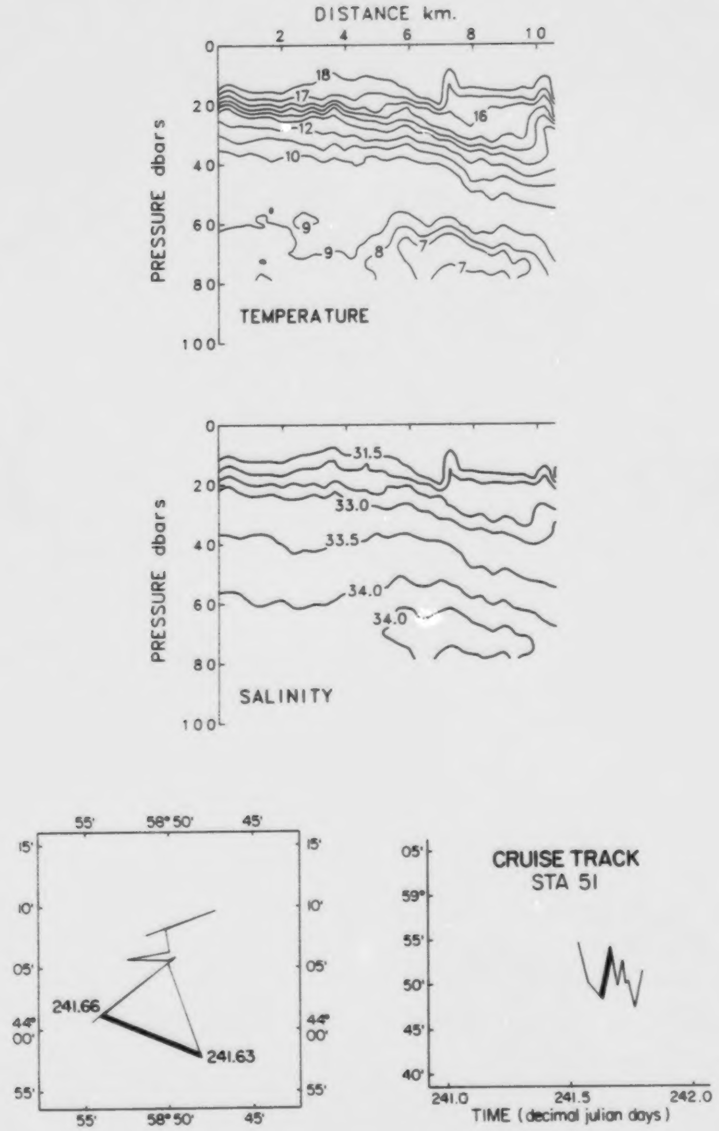
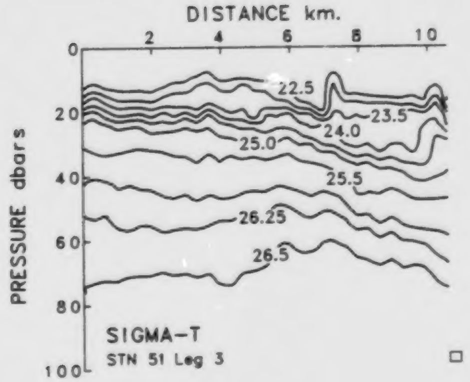

DISTANCE km.
2 4 6 8 10
PRESSURE dbars
0 20 40 60 80 100
18
17
16
12
10
9
8
7
TEMPERATURE
31.5
33.0
33.5
34.0
SALINITY
55' 58° 50' 45'
15' 10' 05' 44° 00' 55'
241.66
241.63
CRUISE TRACK
STA 51
05' 59° 55' 50' 45' 40'
241.0 241.5 242.0
TIME (decimal julian days)

Fig. 177


DISTANCE km.
2
4
6
8
10
0
20
40
60
80
100
PRESSURE dbars
22.5
23.5
24.0
25.0
25.5
26.25
26.5
SIGMA-T
STN 51 Leg 3

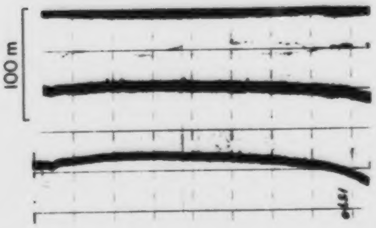

100 m

Fig. 178

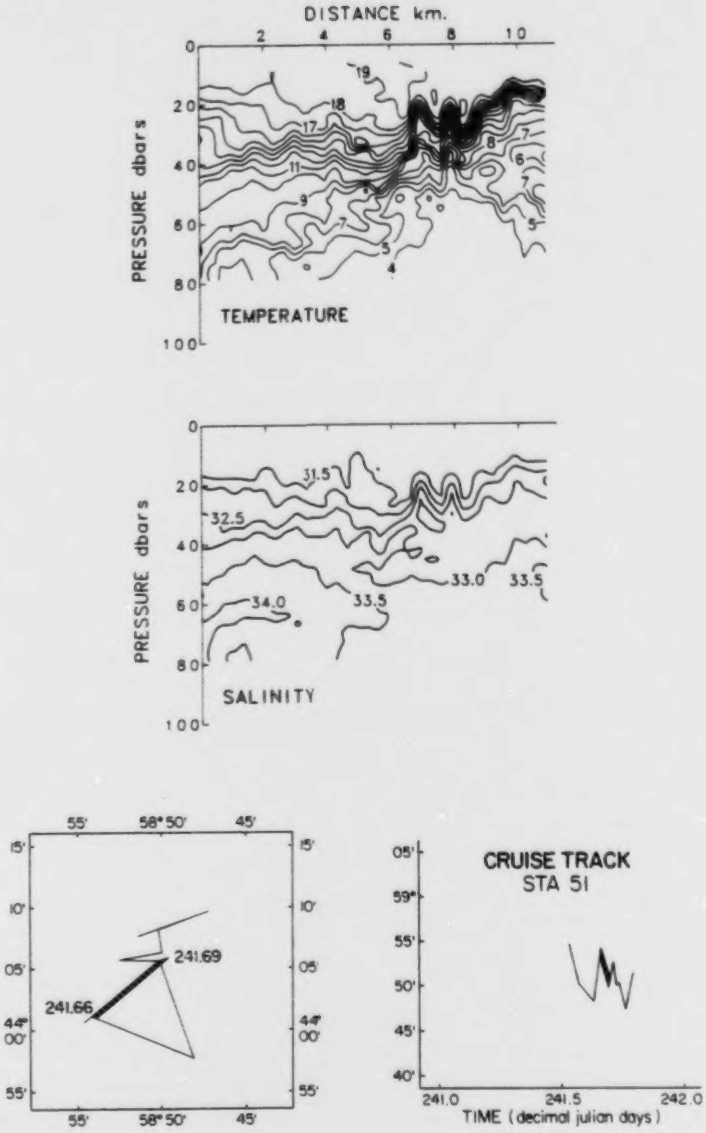
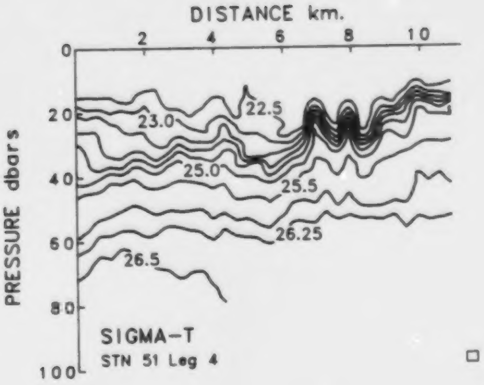

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
CRUISE TRACK
STA 51
241.66
241.69
58°50'
TIME (decimal julian days)

Fig. 179


DISTANCE km.
2
4
6
8
10
0
20
40
60
80
100
PRESSURE dbars
22.5
23.0
25.0
25.5
26.25
26.5
SIGMA-T
STN 51 Leg 4

100 m

Fig. 180

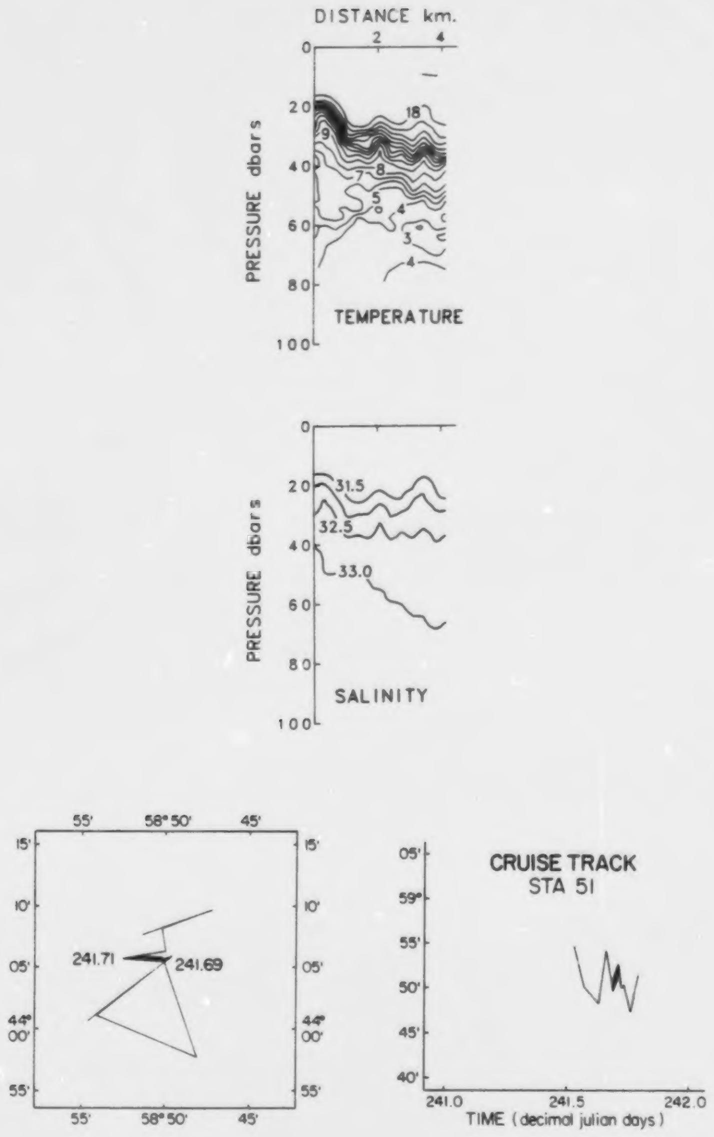

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
31.5
32.5
33.0
241.71
241.69
58° 50'
CRUISE TRACK
STA 51
TIME (decimal julian days)

Fig. 181

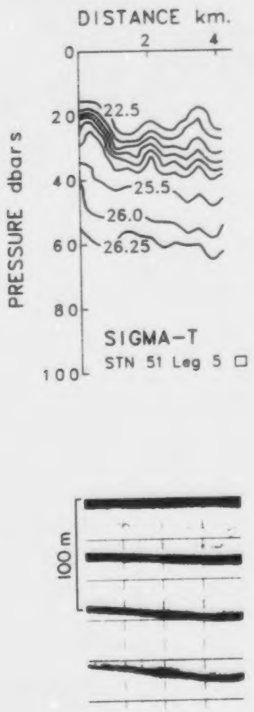

DISTANCE km.
2
4
0
20
40
60
80
100
PRESSURE dbars
22.5
25.5
26.0
26.25
SIGMA-T
STN 51 Leg 5
100 m

Fig. 182

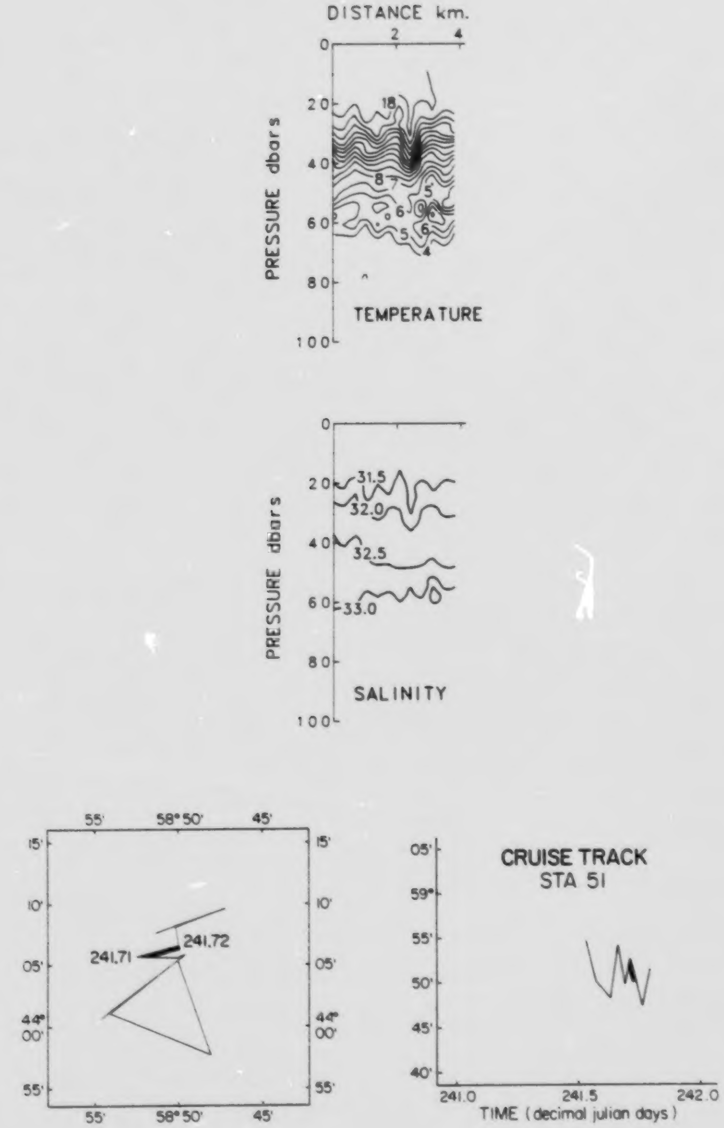

DISTANCE km.
0
2
4
20
40
60
80
100
PRESSURE dbars
18
8
7
6
5
4
TEMPERATURE
0
20
40
60
80
100
PRESSURE dbars
31.5
32.0
32.5
33.0
SALINITY
55'
58° 50'
45'
15'
10'
05'
44° 00'
55'
241.71
241.72
CRUISE TRACK
STA 51
05'
59°
55'
50'
45'
40'
241.0
241.5
242.0
TIME (decimal julian days)

Fig. 183

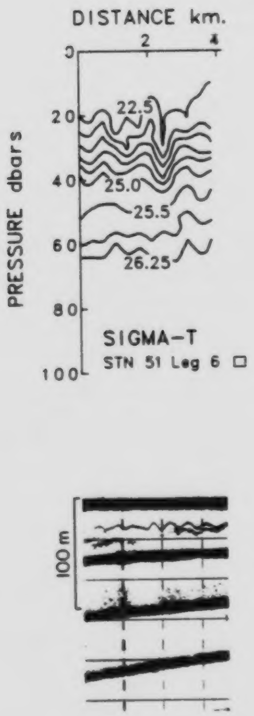

DISTANCE km.
0
2
4
20
40
60
80
100
PRESSURE dbars
22.5
25.0
25.5
26.25
SIGMA-T
STN 51 Leg 6
100m

Fig. 184

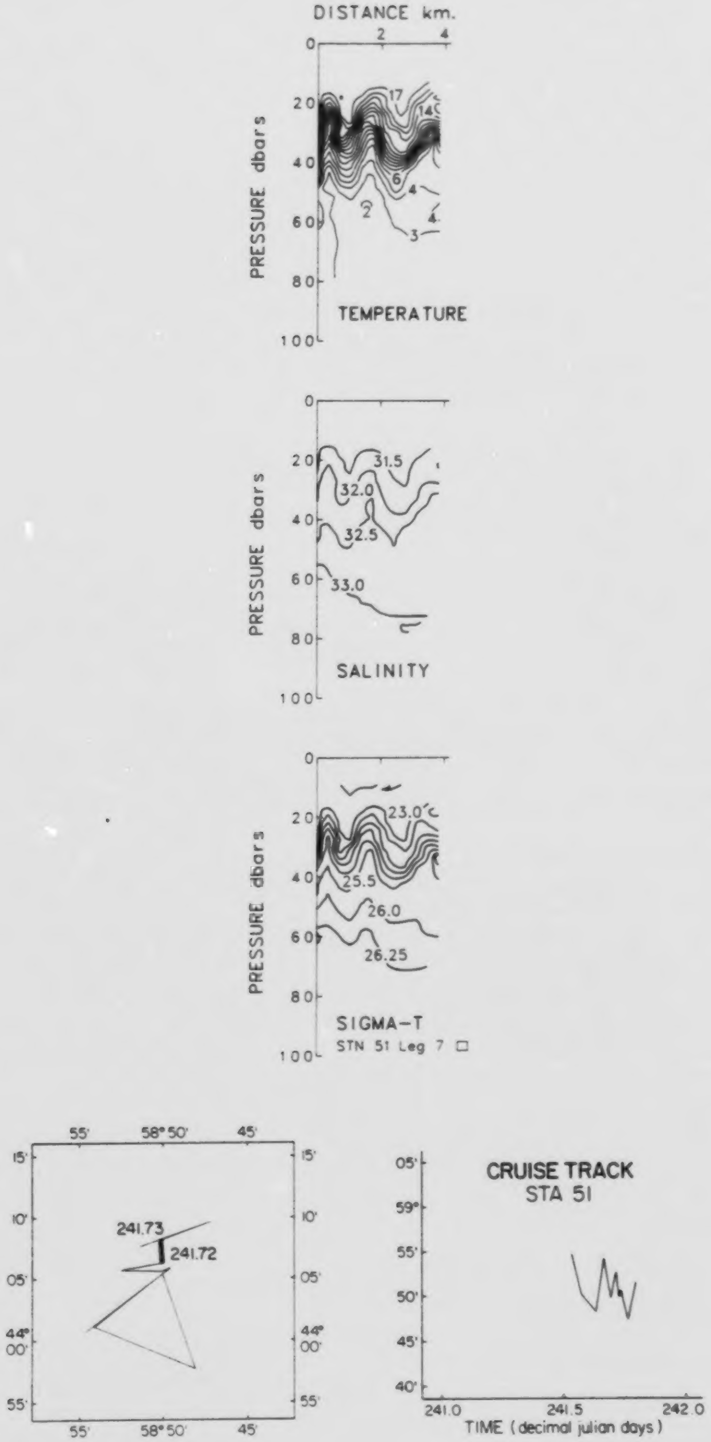
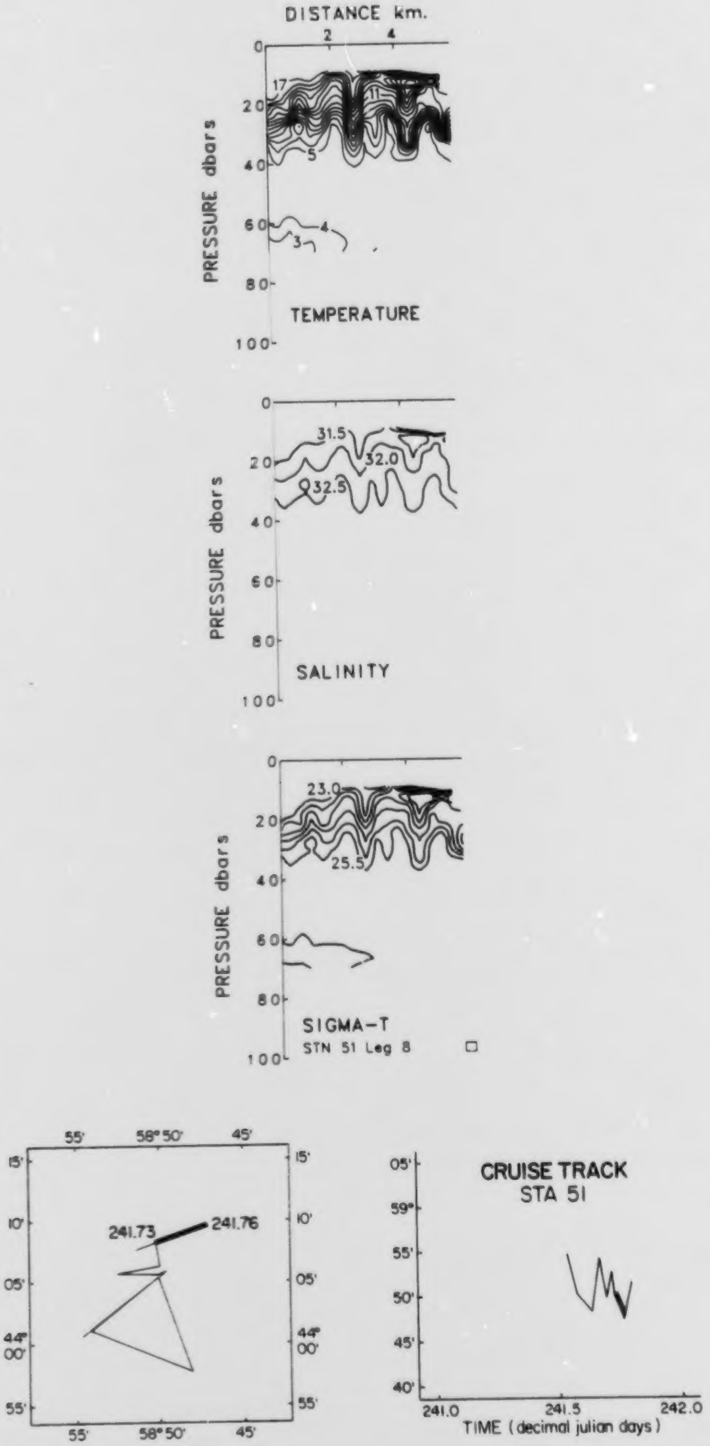

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
31.5
32.0
32.5
33.0
SIGMA-T
23.0
25.5
26.0
26.25
STN 51 Leg 7
241.73
241.72
58°50'
44° 00'
CRUISE TRACK
STA 51
TIME (decimal julian days)

Fig. 185



DISTANCE km.
2
4
0
20
40
60
80
100
17
11
5
4
3
PRESSURE dbars
TEMPERATURE
31.5
32.0
32.5
SALINITY
23.0
25.5
SIGMA-T
STN 51 Leg 8
55'
58°50'
45'
15'
10'
05'
44° 00'
241.73
241.76
CRUISE TRACK
STA 51
59°
50'
45'
40'
241.0
241.5
242.0
TIME (decimal julian days)

Fig. 186

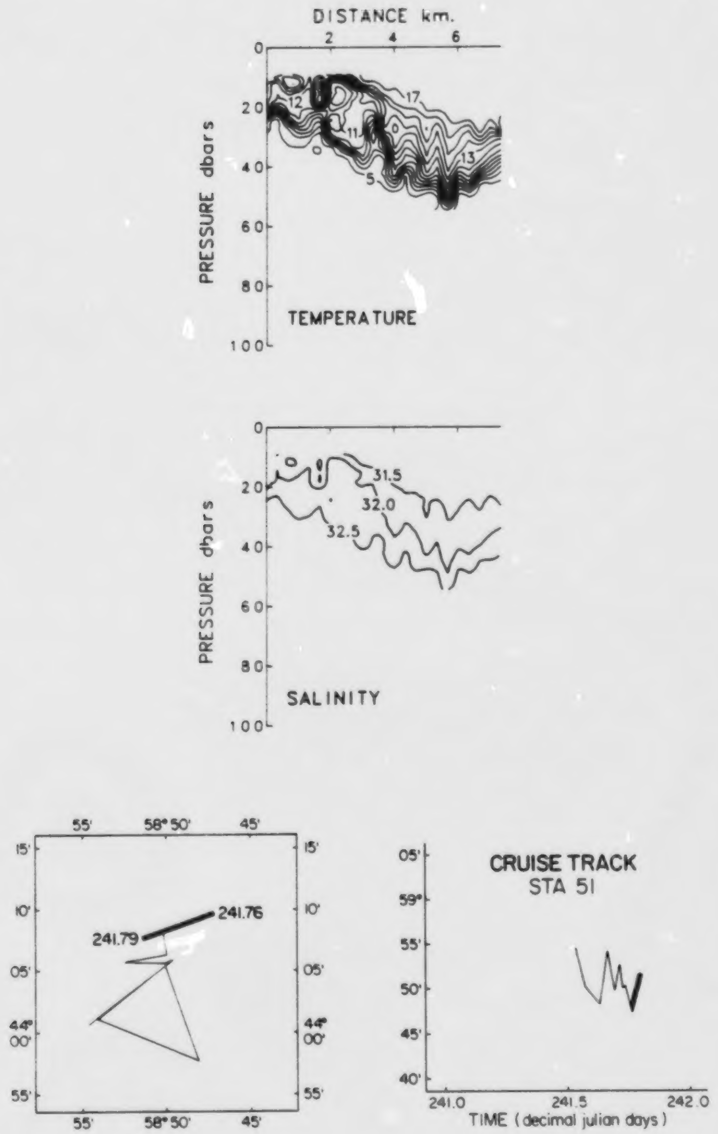
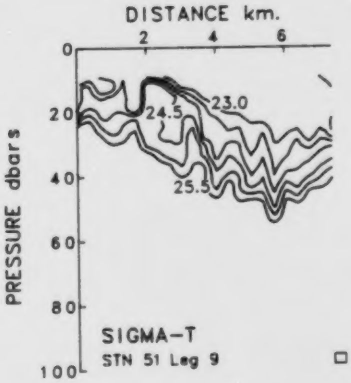

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
31.5
32.0
32.5
241.76
241.79
58°50'
44° 00'
CRUISE TRACK
STA 51
TIME (decimal julian days)

Fig. 187


DISTANCE km.
2
4
6
0
20
40
60
80
100
PRESSURE dbars
23.0
24.5
25.5
SIGMA-T
STN 51 Leg 9

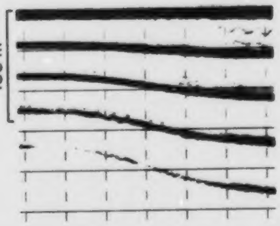

100 m

Fig. 188

Figures 189-223.

BATFISH station 52: 26 sections of Temperature, Salinity and Sigma-t vs. pressure, location map and latitude vs. time plot. Acoustic backscatter plots for selected sections.

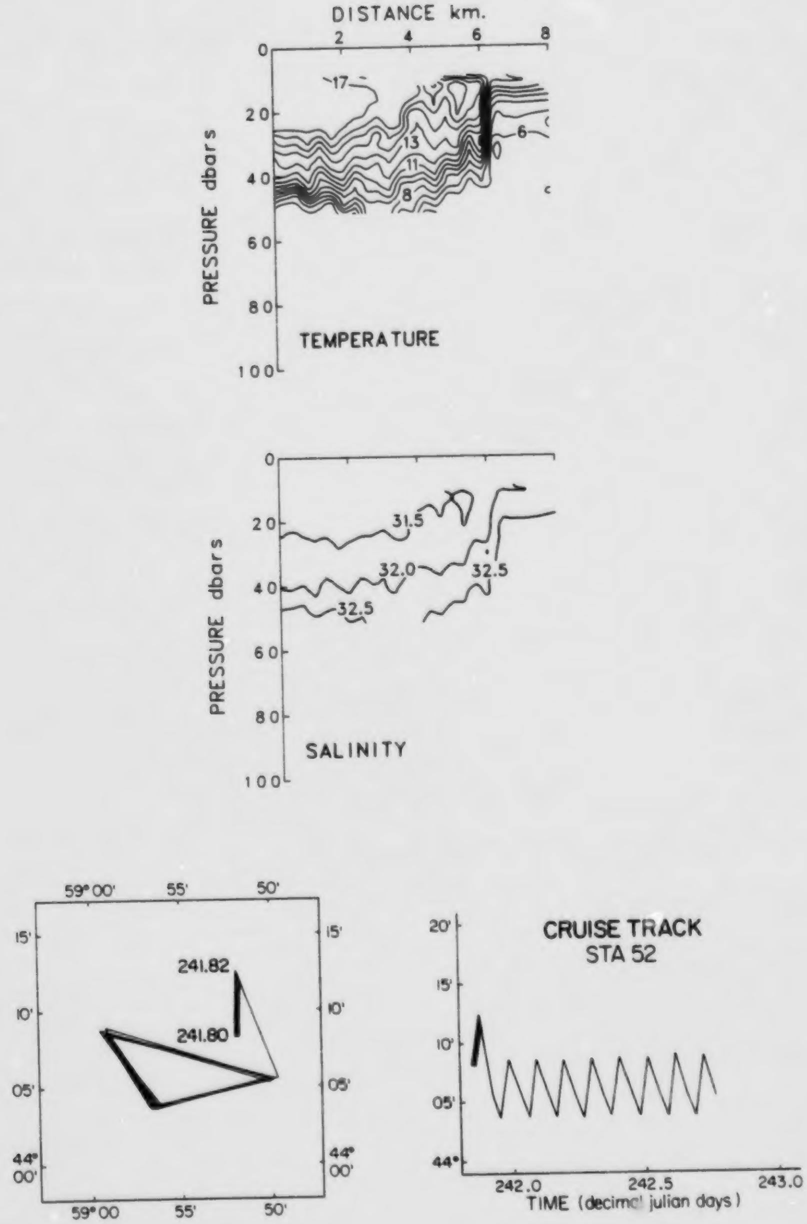
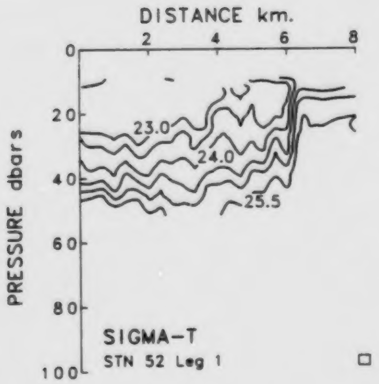

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
31.5
32.0
32.5
32.5
59° 00'
55'
50'
241.82
241.80
CRUISE TRACK
STA 52
TIME (decimal julian days)
242.0
242.5
243.0

Fig. 189


DISTANCE km.
2
4
6
8
0
20
40
60
80
100
PRESSURE dbars
23.0
24.0
25.5
SIGMA-T
STN 52 Leg 1

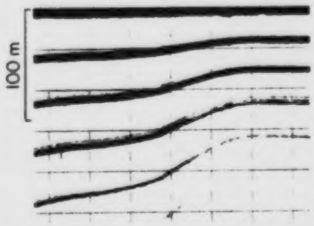

100 m

Fig. 190

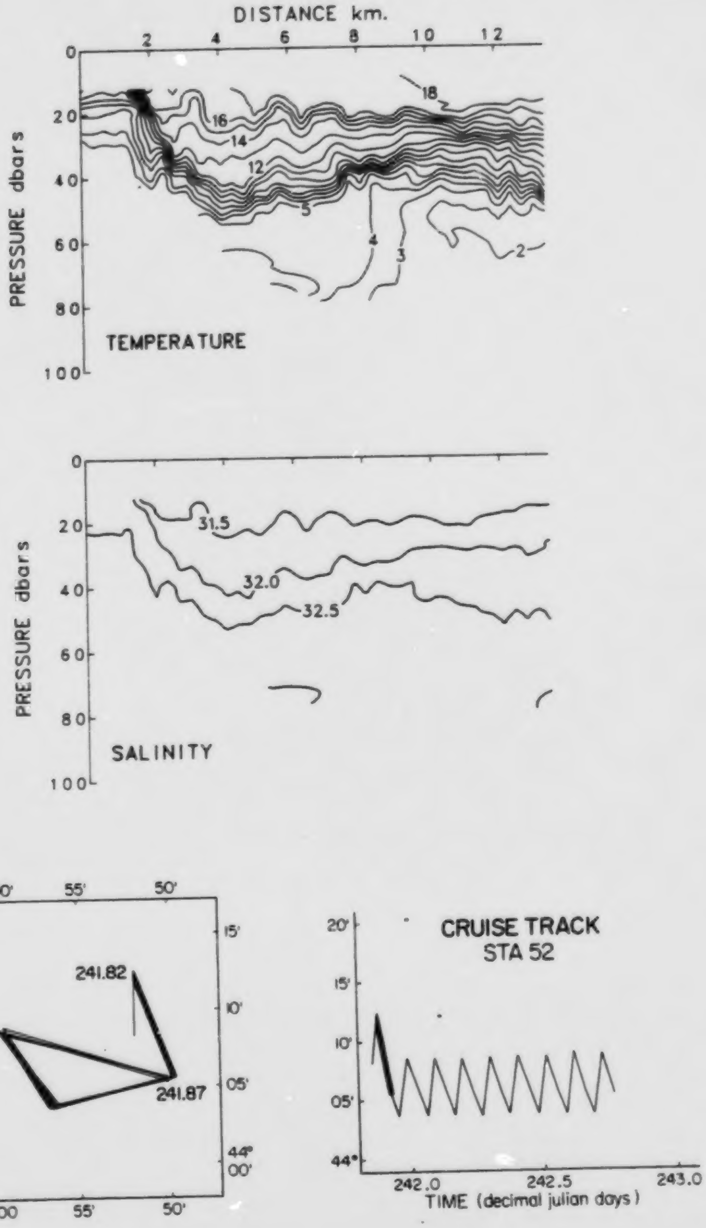
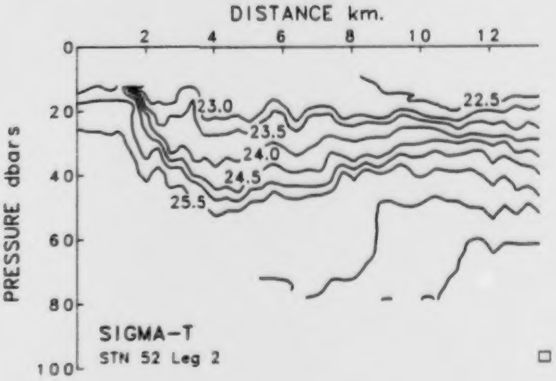

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
31.5
32.0
32.5
241.82
241.87
CRUISE TRACK
STA 52
TIME (decimal julian days)

Fig. 191


DISTANCE km.
2
4
6
8
10
12
0
20
40
60
80
100
PRESSURE dbars
23.0
23.5
24.0
24.5
25.5
22.5
SIGMA-T
STN 52 Leg 2

100 m

Fig. 192

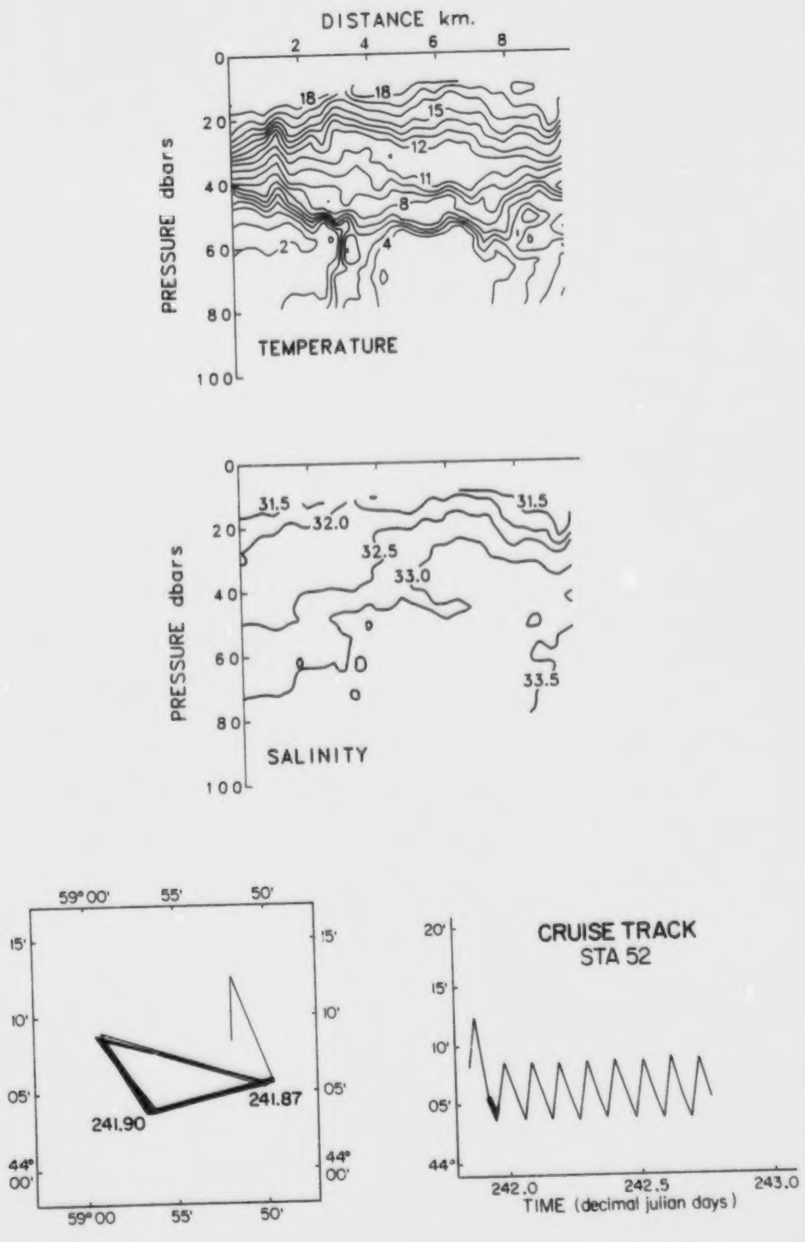

DISTANCE km.
2
4
6
8
0
20
40
60
80
100
PRESSURE dbars
18
18
15
12
11
8
2
4
0
TEMPERATURE
0
20
40
60
80
100
PRESSURE dbars
31.5
32.0
31.5
32.5
33.0
33.5
SALINITY
59° 00'
55'
50'
15'
10'
05'
44° 00'
241.87
241.90
20'
15'
10'
05'
44°
CRUISE TRACK
STA 52
242.0
242.5
243.0
TIME (decimal julian days)

Fig. 193

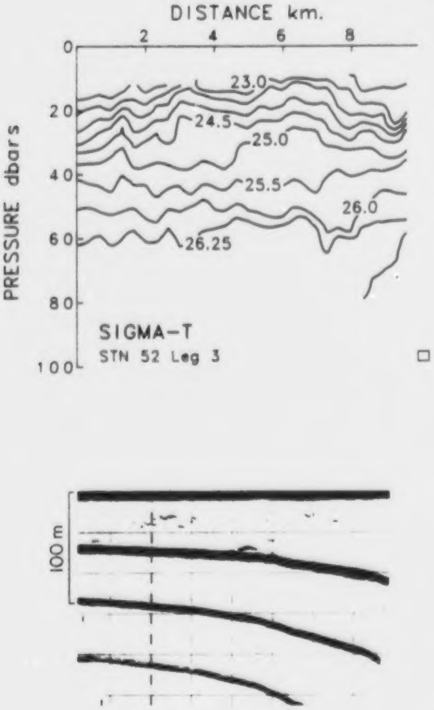
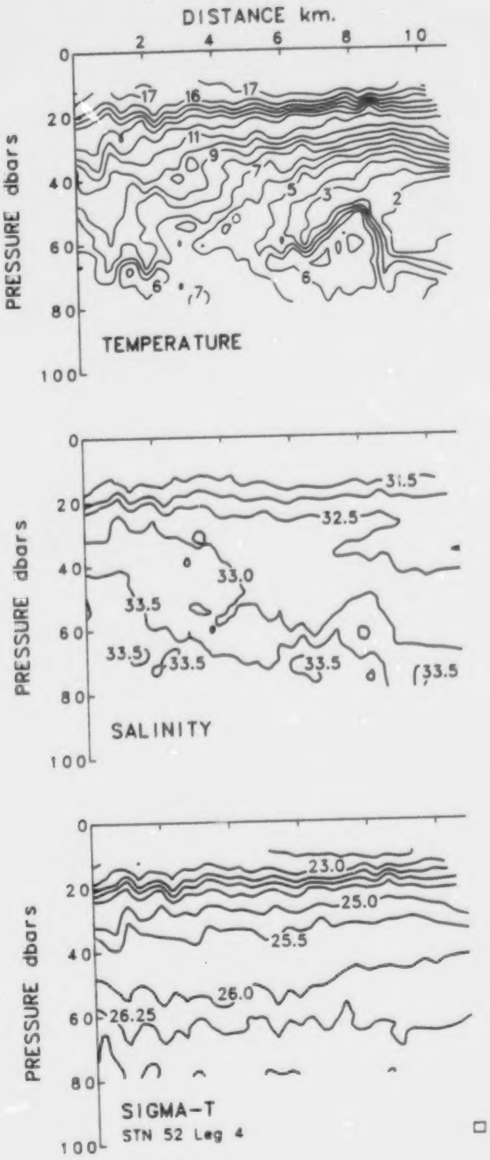
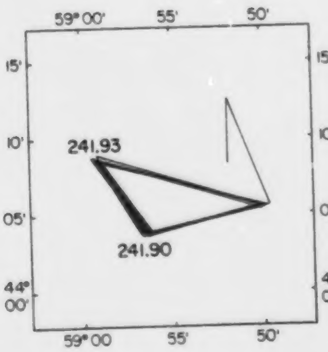

DISTANCE km.
2
4
6
8
0
20
40
60
80
100
PRESSURE dbars
23.0
24.5
25.0
25.5
26.0
26.25
SIGMA-T
STN 52 Leg 3
100 m

Fig. 194


DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 52 Leg 4


241.93
241.90
59° 00'
55'
50'

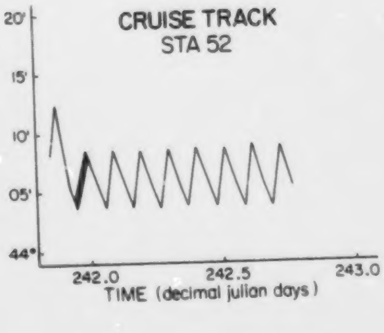
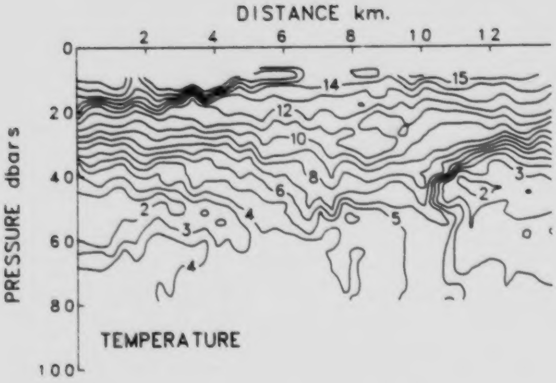
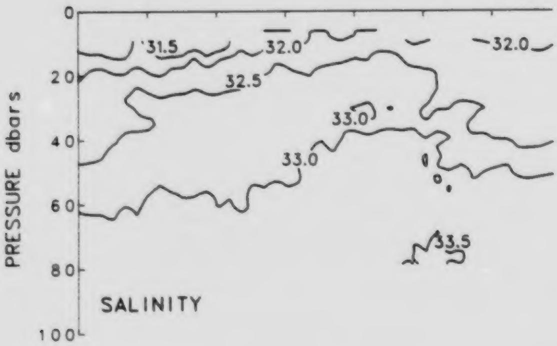
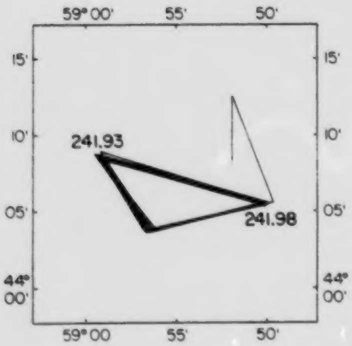

CRUISE TRACK
STA 52
TIME (decimal julian days)

Fig. 195


DISTANCE km.
PRESSURE dbars
TEMPERATURE


PRESSURE dbars
SALINITY


241.93
241.98

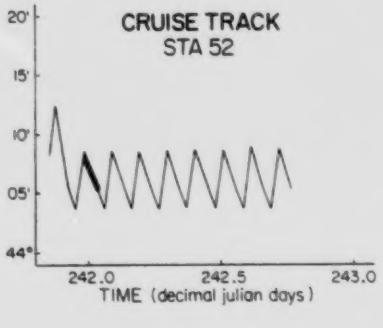

CRUISE TRACK
STA 52
TIME (decimal julian days)

Fig. 196

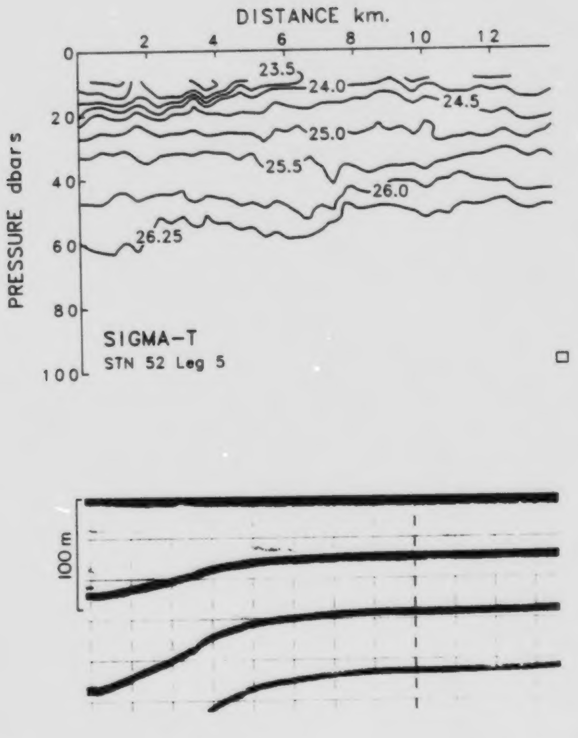

DISTANCE km.
2
4
6
8
10
12
0
20
40
60
80
100
PRESSURE dbars
23.5
24.0
24.5
25.0
25.5
26.0
26.25
SIGMA-T
STN 52 Leg 5
100 m

Fig. 197

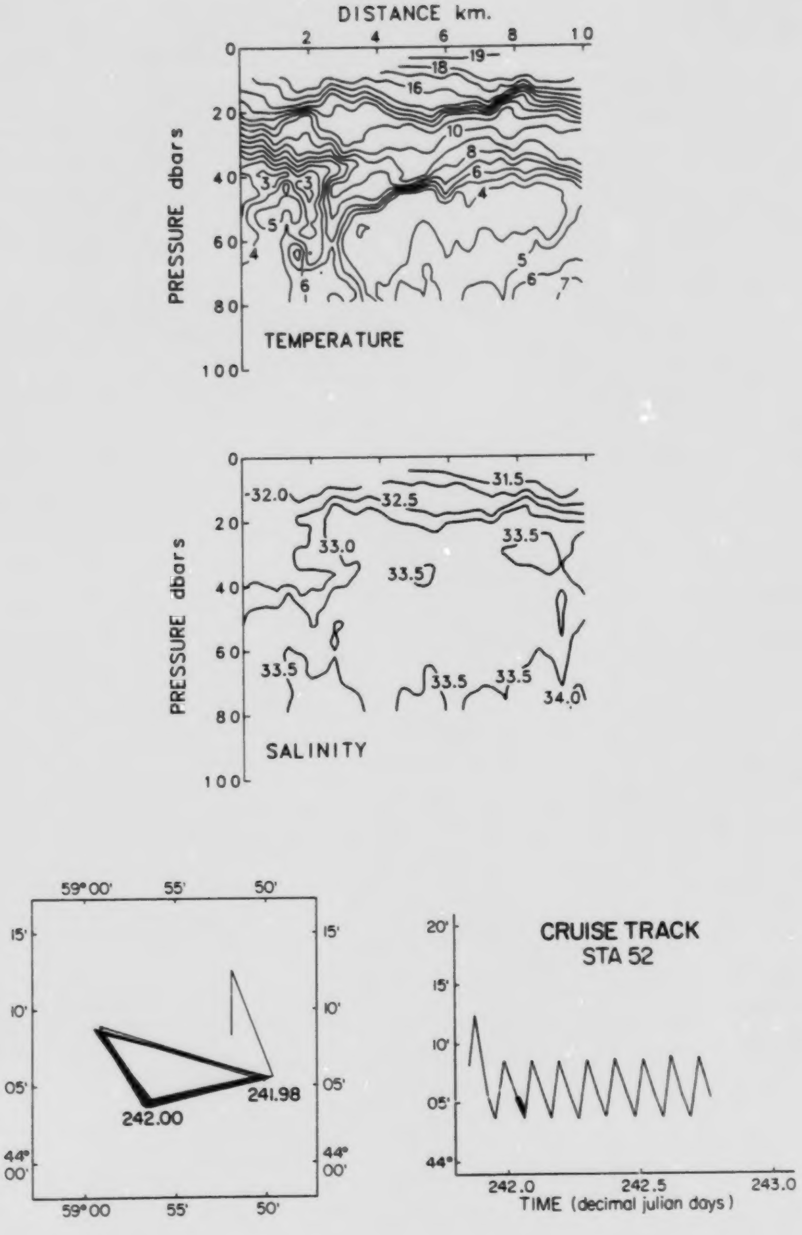
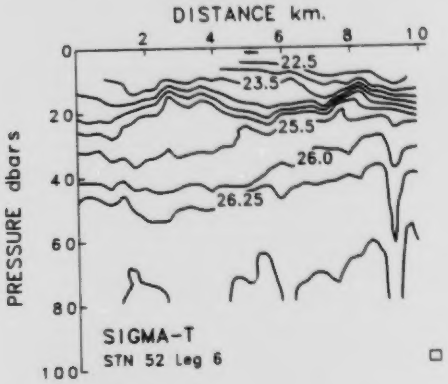

DISTANCE km.
2
4
6
8
10
0
20
40
60
80
100
PRESSURE dbars
19
18
16
10
8
6
4
3
3
5
4
6
5
6
7
TEMPERATURE
0
20
40
60
80
100
PRESSURE dbars
31.5
-32.0
32.5
33.0
33.5
33.5
33.5
33.5
33.5
33.5
34.0
SALINITY
59°00'
55'
50'
15'
10'
05'
44° 00'
241.98
242.00
CRUISE TRACK
STA 52
20'
15'
10'
05'
44°
242.0
242.5
243.0
TIME (decimal julian days)

Fig. 198


DISTANCE km.
2
4
6
8
10
0
20
40
60
80
100
PRESSURE dbars
22.5
23.5
25.5
26.0
26.25
SIGMA-T
STN 52 Leg 6

100 m

Fig. 199

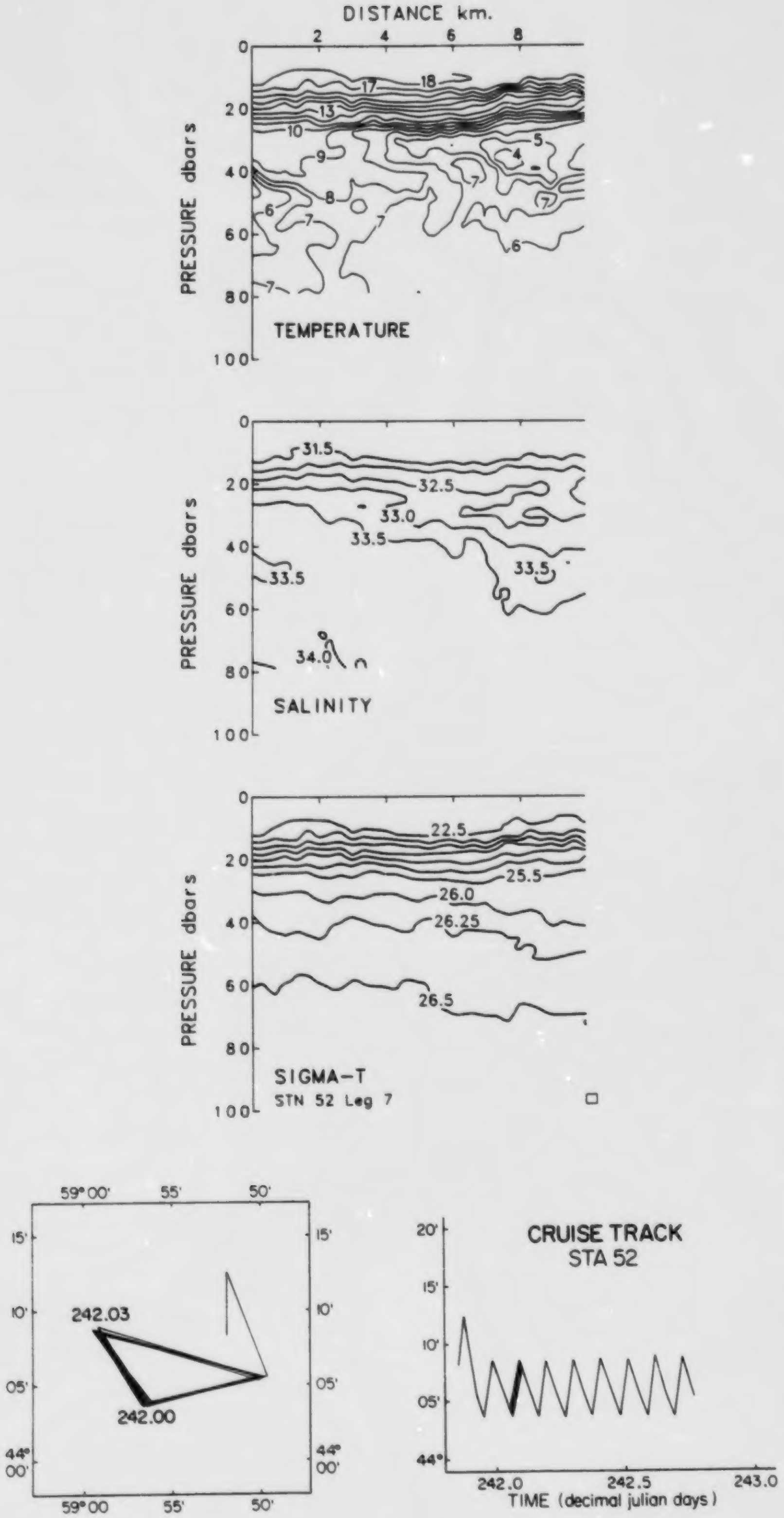

DISTANCE km.
2
4
6
8
PRESSURE dbars
0
20
40
60
80
100
18
17
13
10
9
8
7
6
5
4
TEMPERATURE
31.5
32.5
33.0
33.5
34.0
SALINITY
22.5
25.5
26.0
26.25
26.5
SIGMA-T
STN 52 Leg 7
59°00'
55'
50'
15'
10'
05'
44° 00'
242.03
242.00
CRUISE TRACK
STA 52
20'
242.0
242.5
243.0
TIME (decimal julian days)

Fig. 200

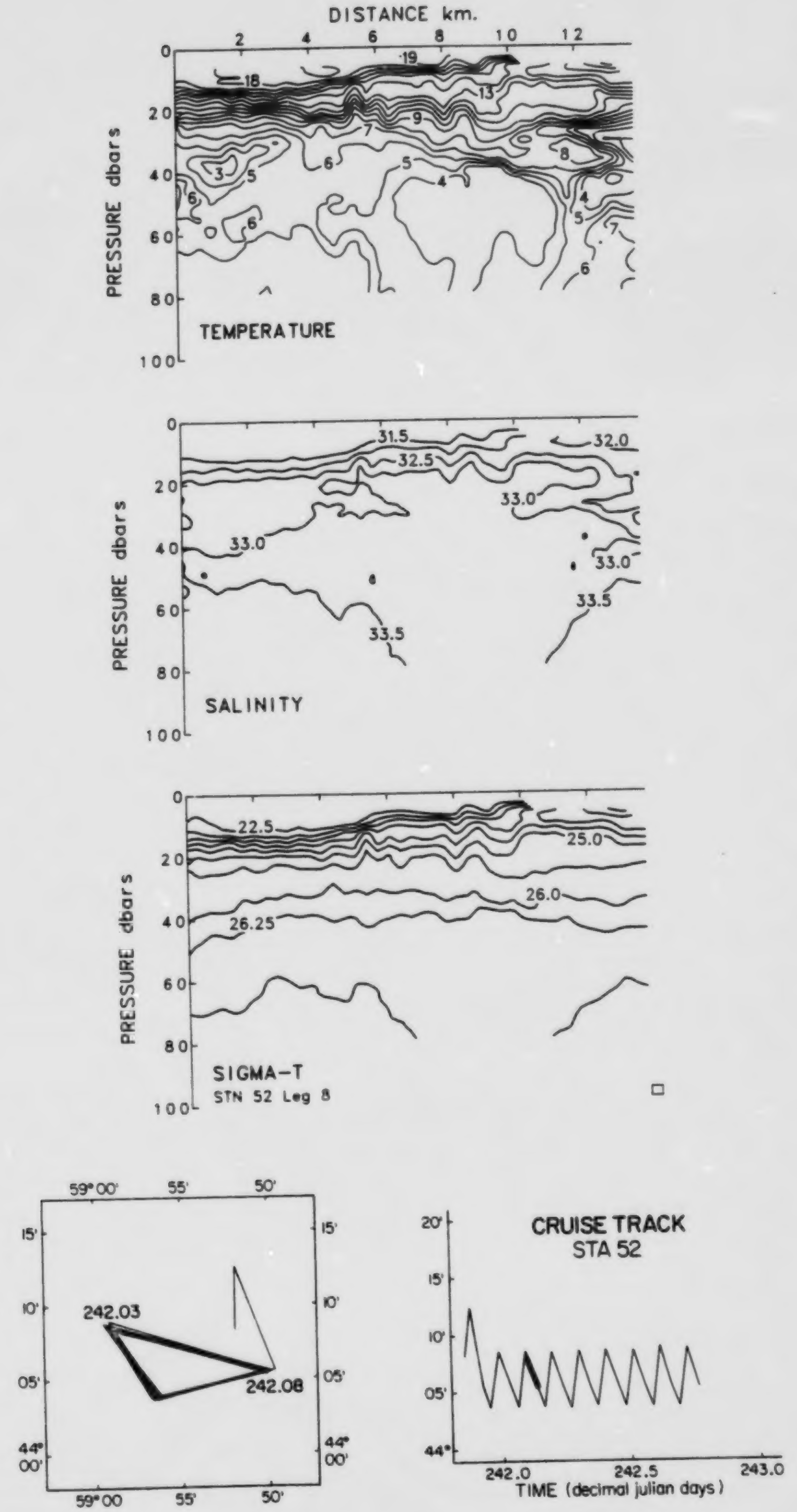

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 52 Leg 8
242.03
242.08
CRUISE TRACK
STA 52
TIME (decimal julian days)

Fig. 201

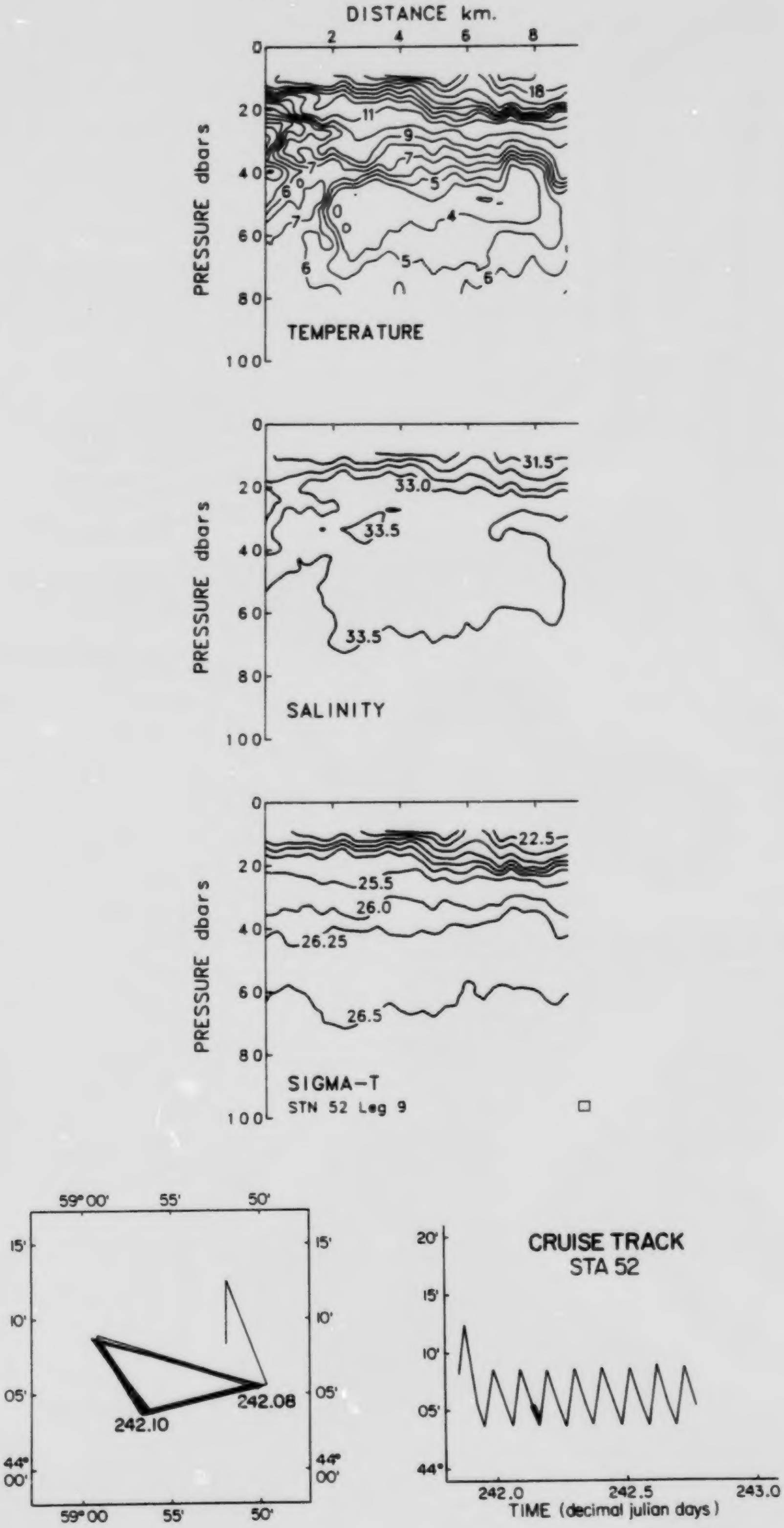

DISTANCE km.
2
4
6
8
0
20
40
60
80
100
PRESSURE dbars
18
11
9
7
5
4
6
7
6
5
6
TEMPERATURE
31.5
33.0
33.5
33.5
SALINITY
22.5
25.5
26.0
26.25
26.5
SIGMA-T
STN 52 Leg 9
59°00'
55'
50'
15'
10'
05'
44°
00'
242.10
242.08
CRUISE TRACK
STA 52
20'
242.0
242.5
243.0
TIME (decimal julian days)

Fig. 202

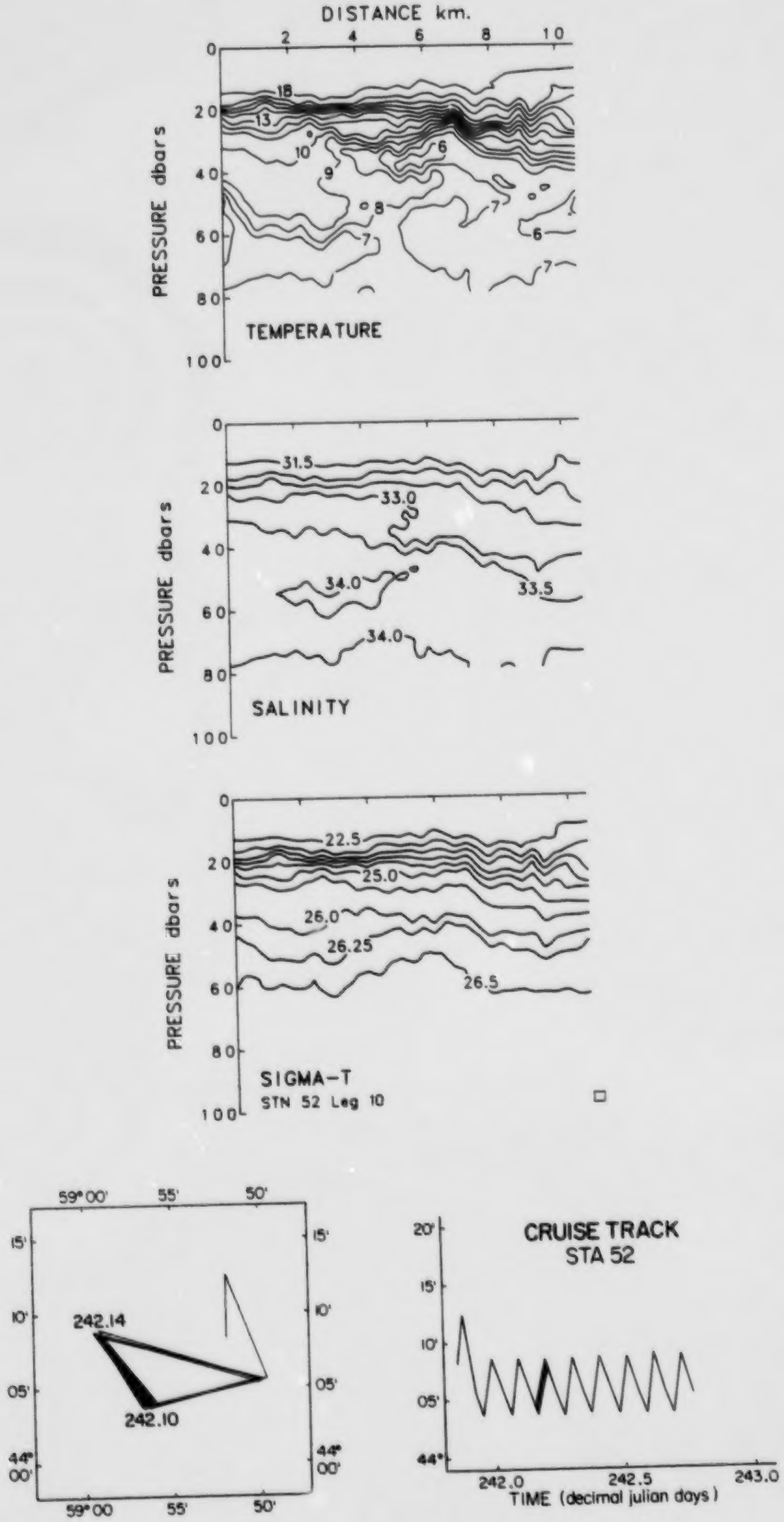

DISTANCE km.
2
4
6
8
10
PRESSURE dbars
0
20
40
60
80
100
18
13
10
9
8
7
6
7
6
7
TEMPERATURE
31.5
33.0
34.0
33.5
34.0
SALINITY
22.5
25.0
26.0
26.25
26.5
SIGMA-T
STN 52 Leg 10
59° 00'
55'
50'
15'
10'
05'
44° 00'
242.14
242.10
59° 00
CRUISE TRACK
STA 52
20'
44°
242.0
242.5
243.0
TIME (decimal julian days)

Fig. 203

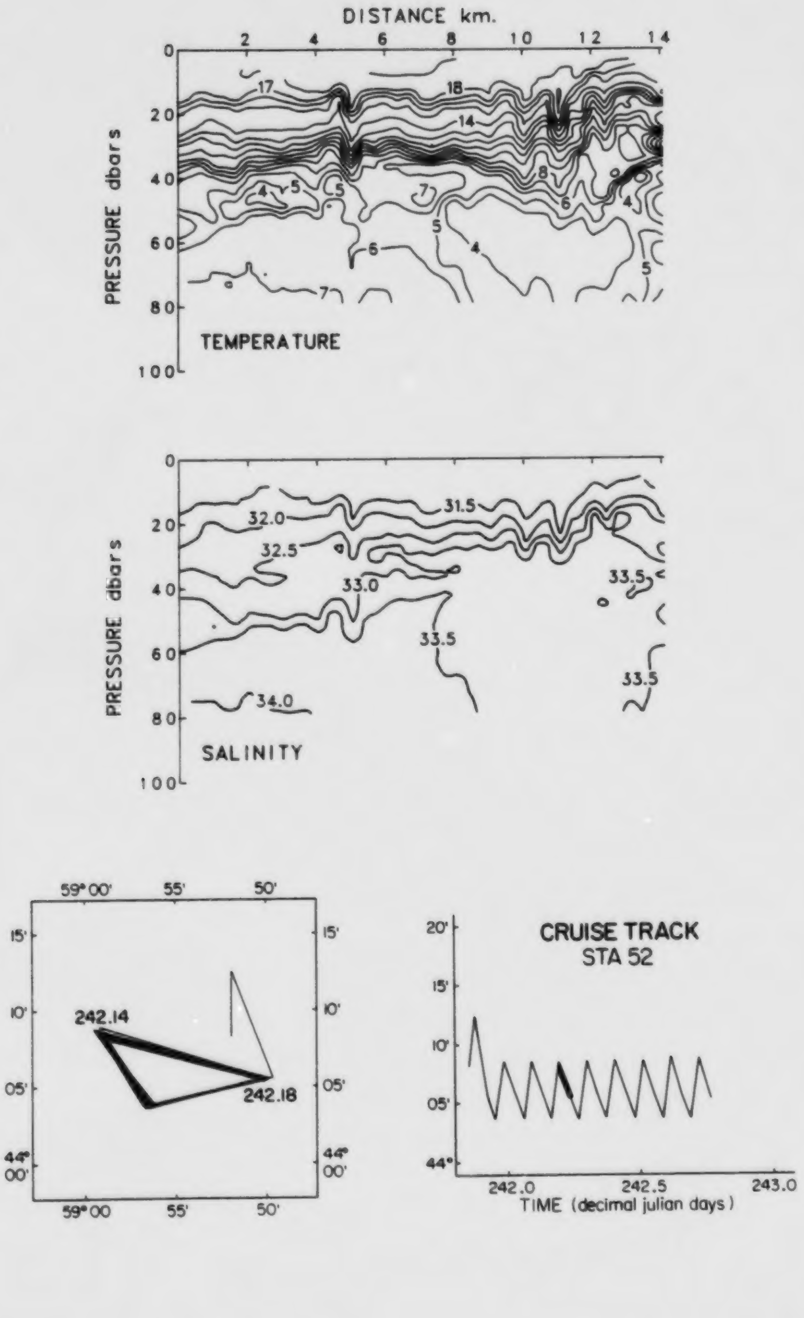
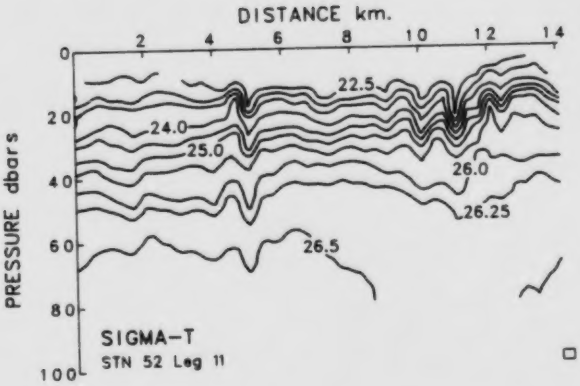

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
CRUISE TRACK
STA 52
242.14
242.18
TIME (decimal julian days)

Fig. 204


DISTANCE km.
2
4
6
8
10
12
14
0
20
40
60
80
100
PRESSURE dbars
22.5
24.0
25.0
26.0
26.25
26.5
SIGMA-T
STN 52 Leg 11

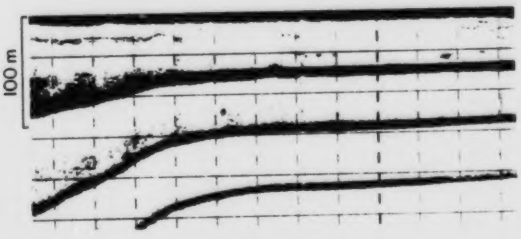

100 m

Fig. 205

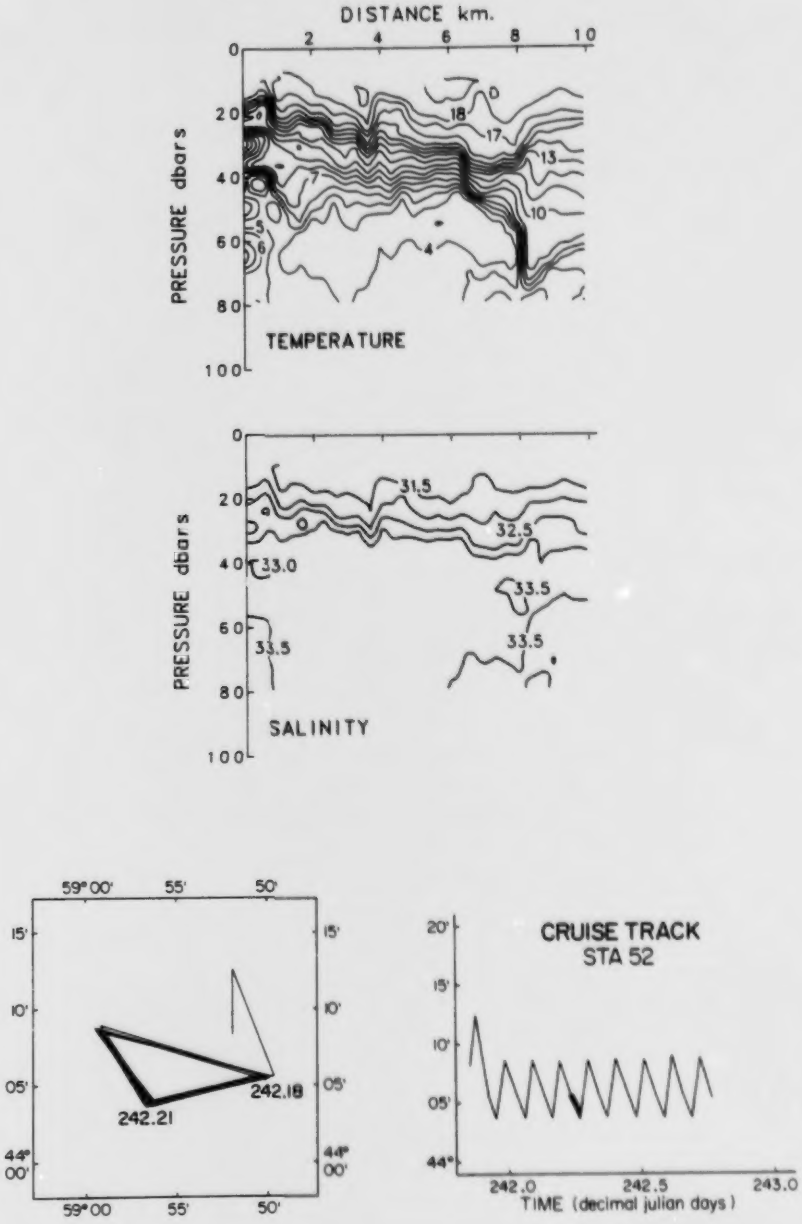
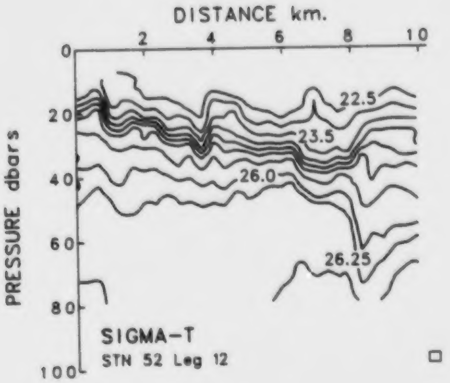

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
31.5
32.5
33.0
33.5
CRUISE TRACK
STA 52
242.21
242.18
59°00'
55'
50'
44°
00'
TIME (decimal julian days)
242.0
242.5
243.0

Fig. 206


DISTANCE km.
2
4
6
8
10
0
20
40
60
80
100
PRESSURE dbars
22.5
23.5
26.0
26.25
SIGMA-T
STN 52 Leg 12

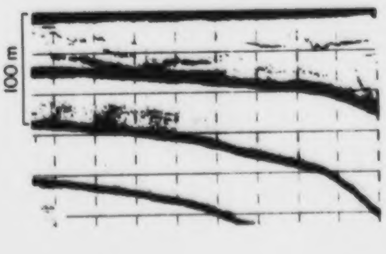

100 m

Fig. 207

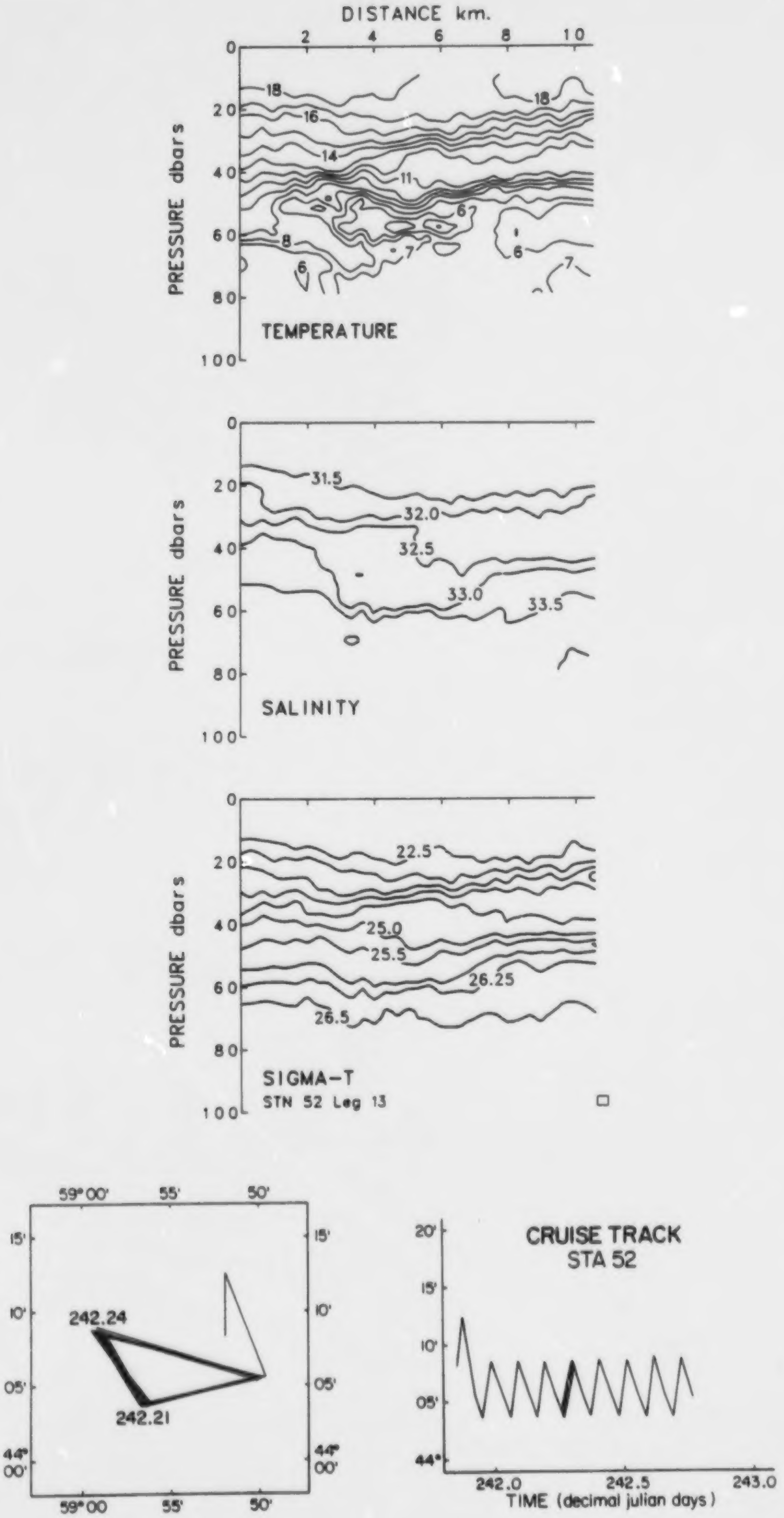

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 52 Leg 13
CRUISE TRACK
STA 52
TIME (decimal julian days)
242.24
242.21

Fig. 208

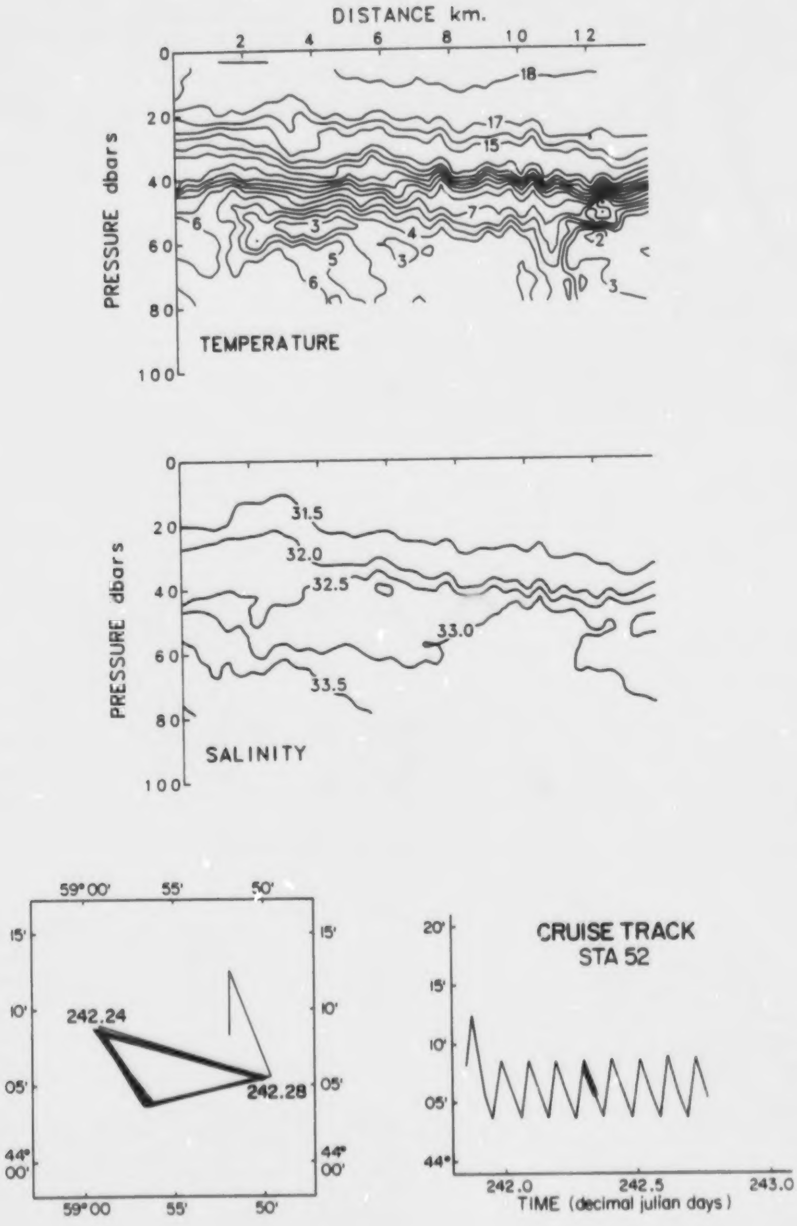
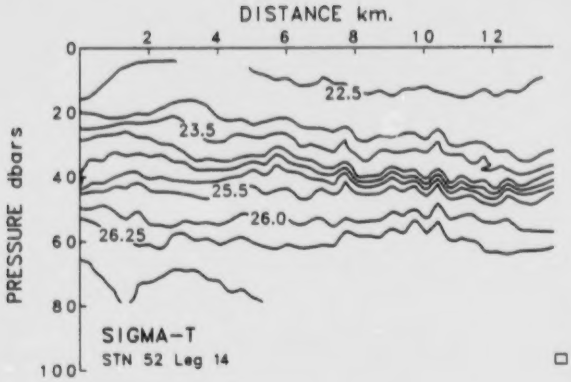

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
31.5
32.0
32.5
33.0
33.5
242.24
242.28
59°00'
55'
50'
CRUISE TRACK
STA 52
TIME (decimal julian days)
242.0
242.5
243.0

Fig. 209


DISTANCE km.
2
4
6
8
10
12
0
20
40
60
80
100
PRESSURE dbars
22.5
23.5
25.5
26.0
26.25
SIGMA-T
STN 52 Leg 14

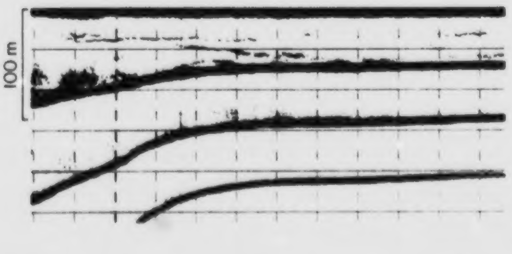
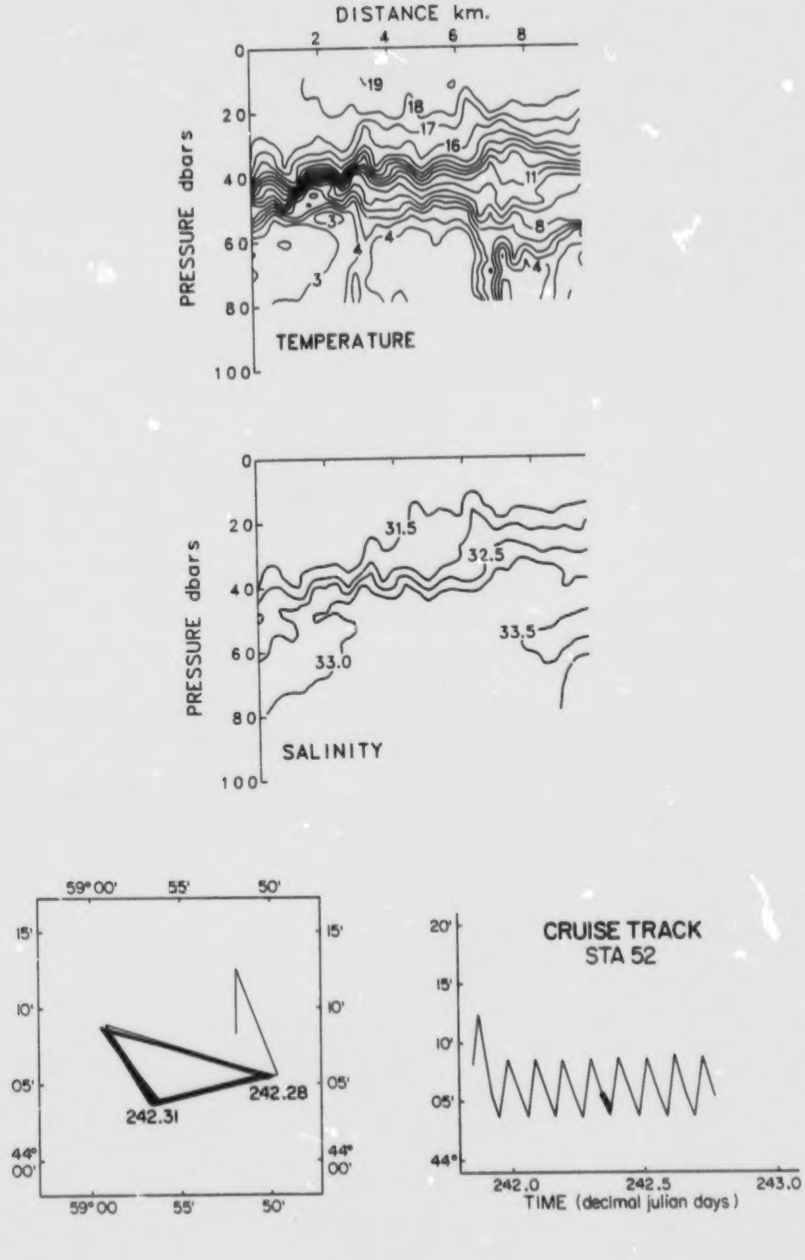

100 m

Fig. 210



DISTANCE km.
2
4
6
8
PRESSURE dbars
0
20
40
60
80
100
19
18
17
16
11
8
4
3
TEMPERATURE
PRESSURE dbars
31.5
32.5
33.5
33.0
SALINITY
59° 00'
55'
50'
15'
10'
05'
44° 00'
242.28
242.31
59° 00
CRUISE TRACK
STA 52
20'
242.0
242.5
243.0
TIME (decimal julian days)

Fig. 211

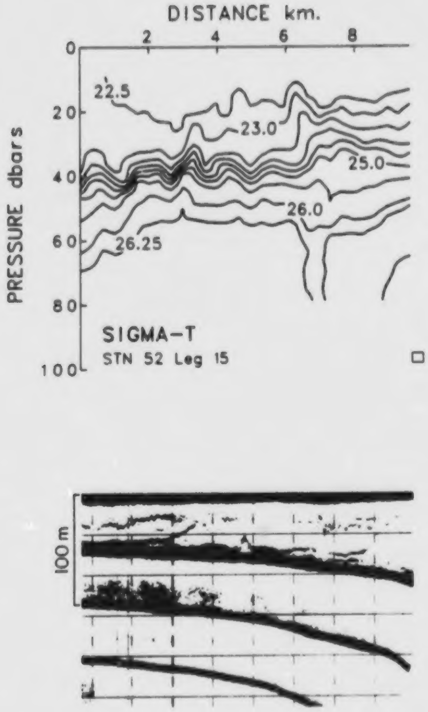

DISTANCE km.
2
4
6
8
0
20
40
60
80
100
PRESSURE dbars
22.5
23.0
25.0
26.0
26.25
SIGMA-T
STN 52 Leg 15
100 m

Fig. 212

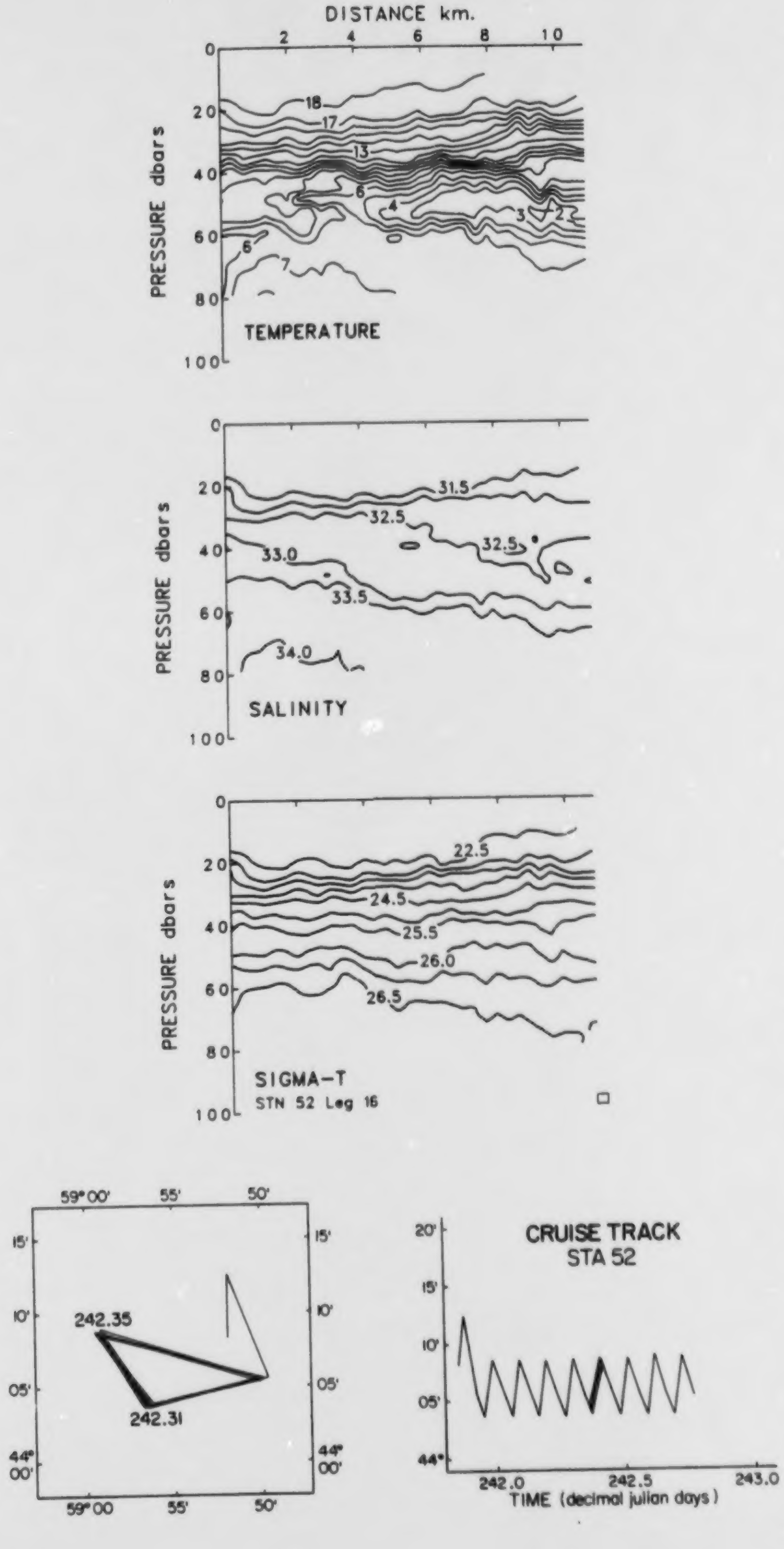
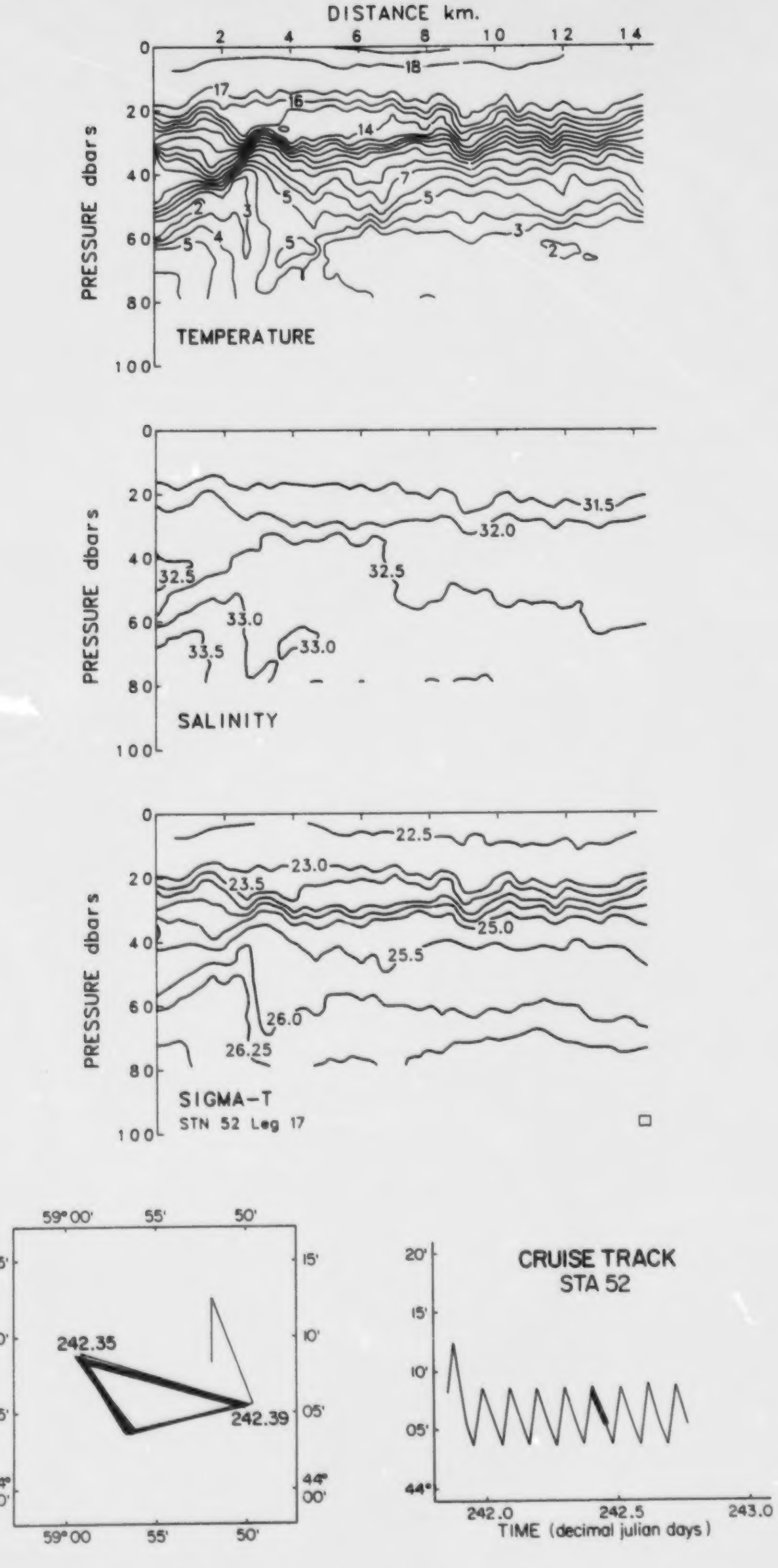
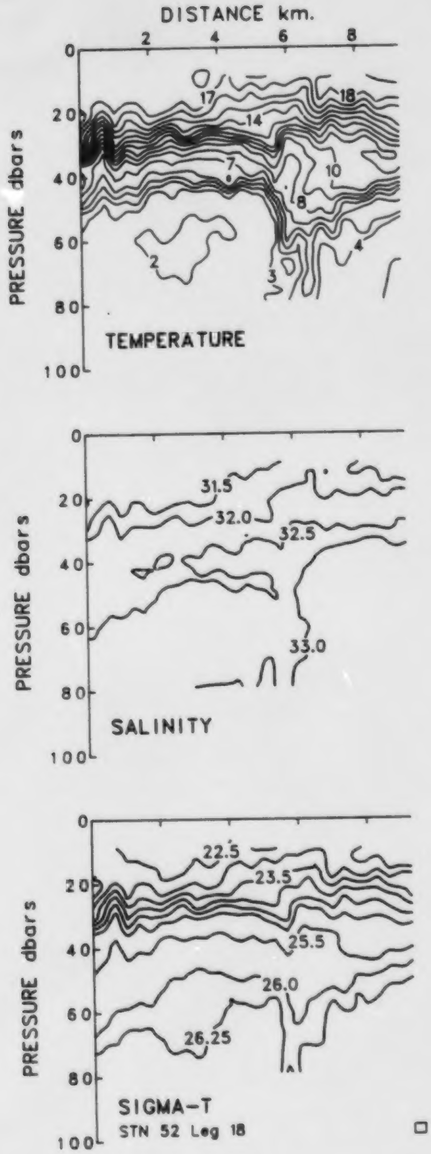

DISTANCE km.
2 4 6 8 10
PRESSURE dbars
0 20 40 60 80 100
18
17
13
6
4
3
2
6
7
TEMPERATURE
31.5
32.5
32.5
33.0
33.5
34.0
SALINITY
22.5
24.5
25.5
26.0
26.5
SIGMA-T
STN 52 Leg 16
59°00' 55' 50'
15' 10' 05'
44° 00'
242.35
242.31
CRUISE TRACK
STA 52
20' 15' 10' 05' 44°
242.0 242.5 243.0
TIME (decimal julian days)

Fig. 213



DISTANCE km.
2 4 6 8 10 12 14
PRESSURE dbars
0 20 40 60 80 100
18
17
16
14
7
5
3
2
4
TEMPERATURE
31.5
32.0
32.5
33.0
33.5
SALINITY
22.5
23.0
23.5
25.0
25.5
26.0
26.25
SIGMA-T
STN 52 Leg 17
59° 00'
55'
50'
15'
10'
05'
44° 00'
242.35
242.39
CRUISE TRACK
STA 52
20'
242.0
242.5
243.0
TIME (decimal julian days)

Fig. 214


DISTANCE km.
2
4
6
8
0
20
40
60
80
100
PRESSURE dbars
17
18
14
7
10
8
2
3
4
TEMPERATURE
31.5
32.0
32.5
33.0
SALINITY
22.5
23.5
25.5
26.0
26.25
SIGMA-T
STN 52 Leg 18

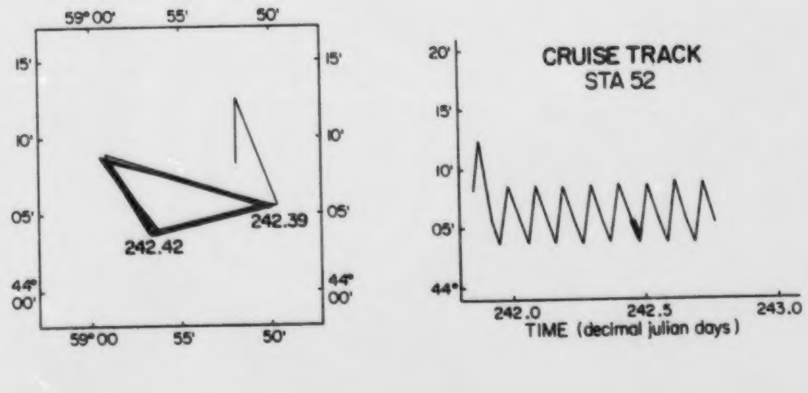

59°00'
55'
50'
15'
10'
05'
44°
00'
242.42
242.39
59°00
CRUISE TRACK
STA 52
20'
242.0
242.5
243.0
TIME (decimal julian days)

Fig. 215

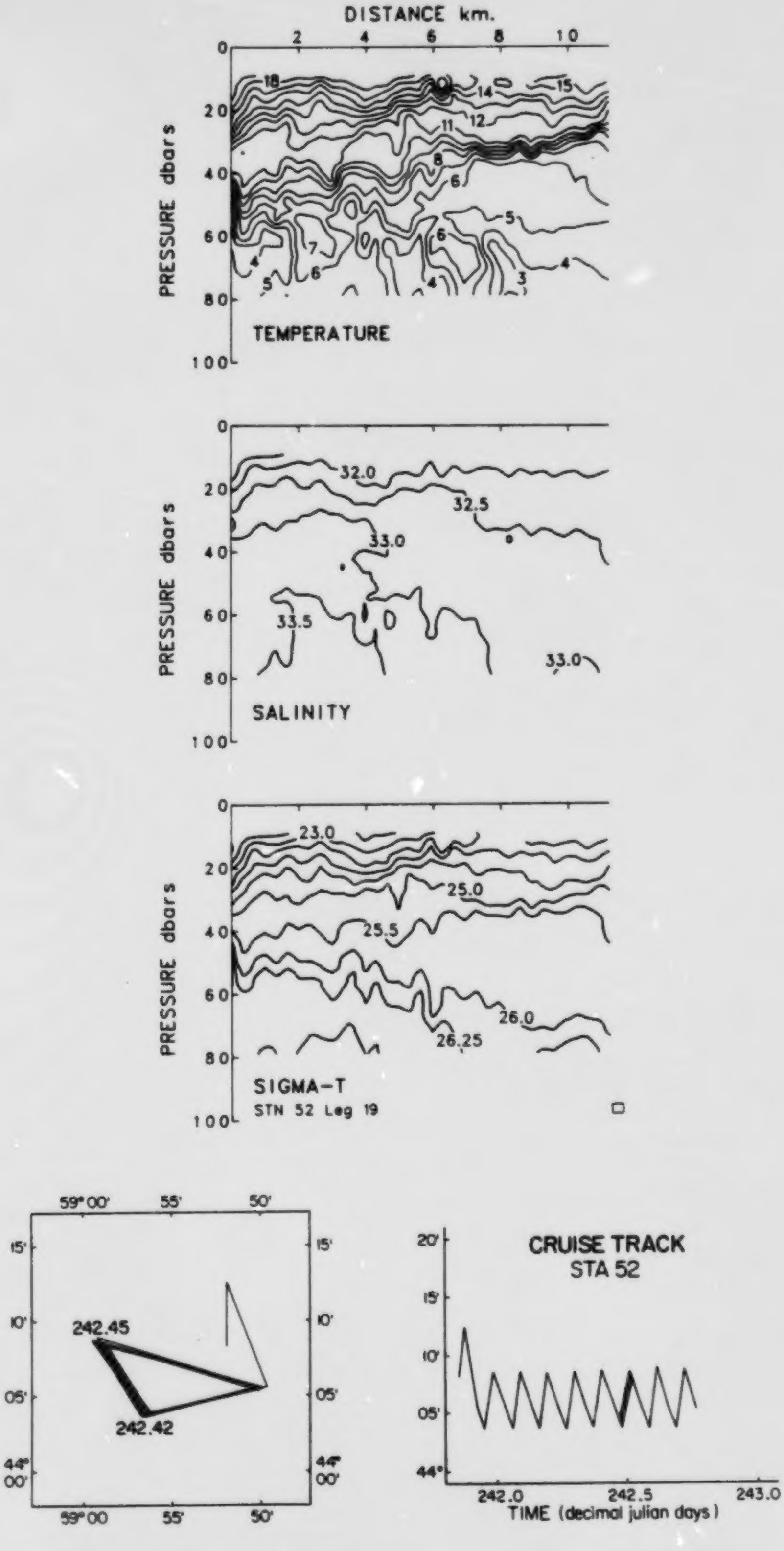

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 52 Leg 19
CRUISE TRACK
STA 52
TIME (decimal julian days)

Fig. 216

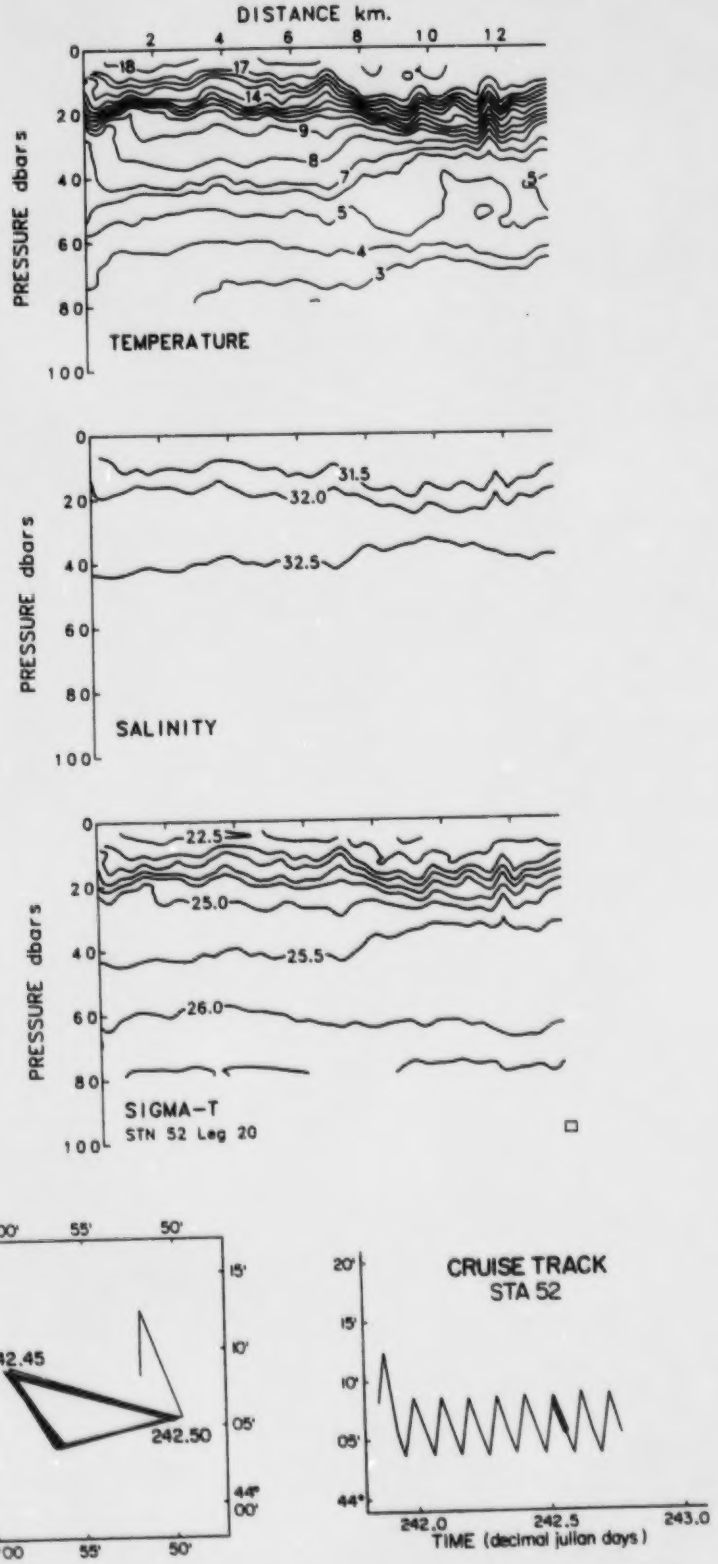

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 52 Leg 20
CRUISE TRACK
STA 52
242.45
242.50
TIME (decimal julian days)

Fig. 217

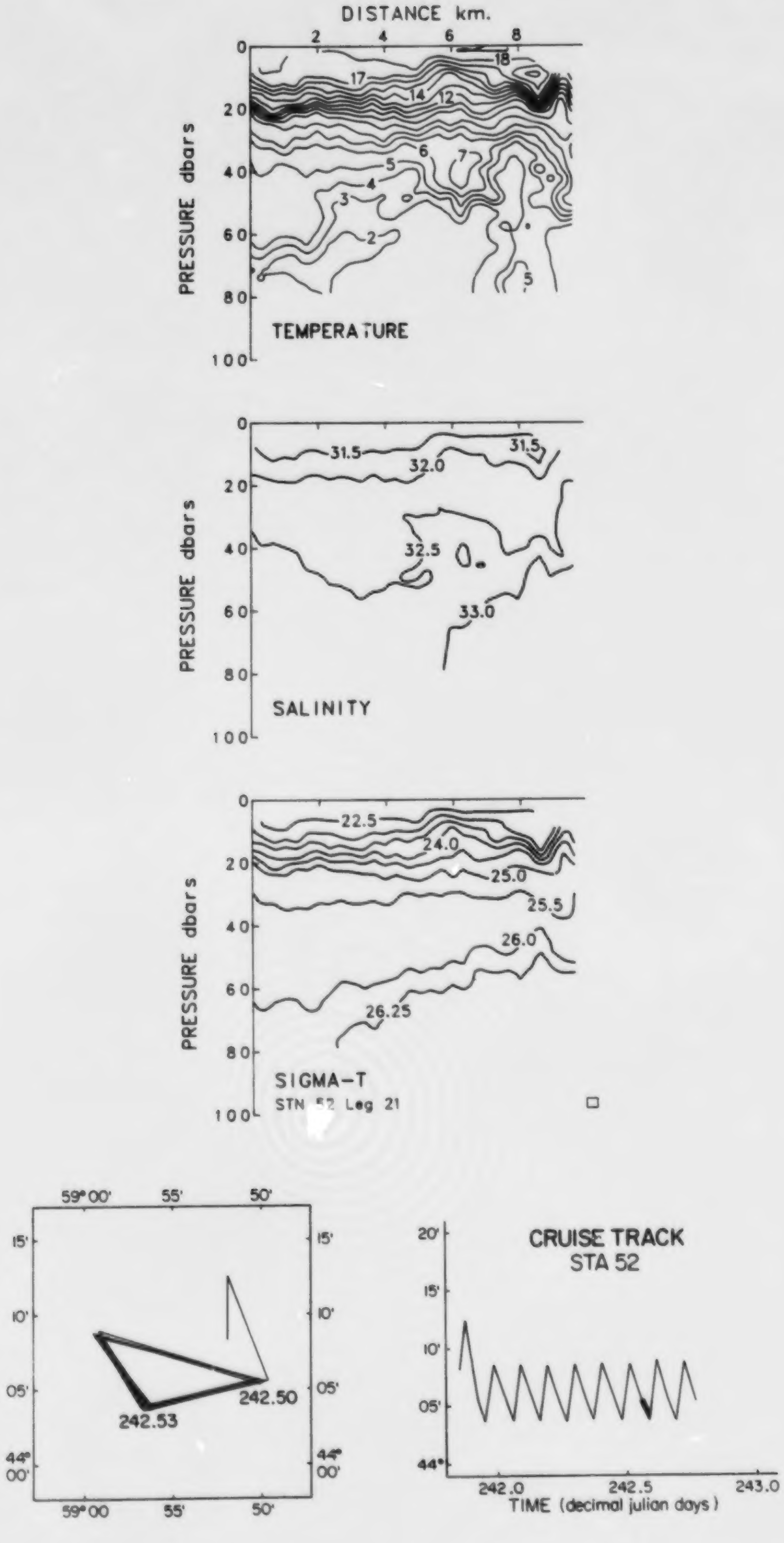
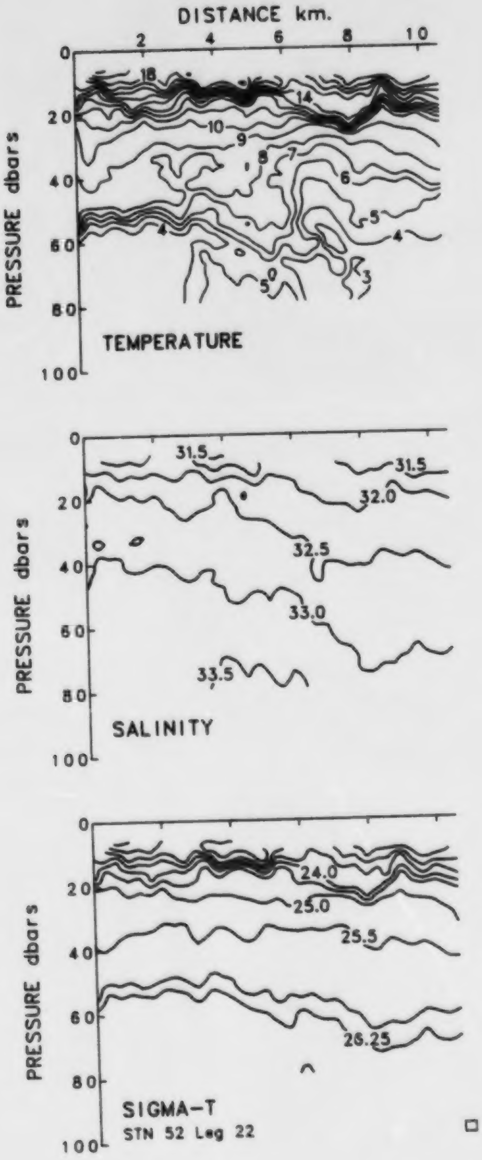

DISTANCE km.
2
4
6
8
0
20
40
60
80
100
PRESSURE dbars
18
17
14
12
6
7
5
4
3
2
5
TEMPERATURE
0
20
40
60
80
100
PRESSURE dbars
31.5
32.0
31.5
32.5
33.0
SALINITY
0
20
40
60
80
100
PRESSURE dbars
22.5
24.0
25.0
25.5
26.0
26.25
SIGMA-T
59°00'
55'
50'
15'
10'
05'
44°
00'
242.50
242.53
59°00
CRUISE TRACK
STA 52
20'
15'
10'
05'
44°
242.0
242.5
243.0
TIME (decimal julian days)

Fig. 218


DISTANCE km.
2
4
6
8
10
0
20
40
60
80
100
PRESSURE dbars
18
14
10
9
8
7
6
5
4
3
TEMPERATURE
31.5
32.0
32.5
33.0
33.5
SALINITY
24.0
25.0
25.5
26.25
SIGMA-T
STN 52 Leg 22

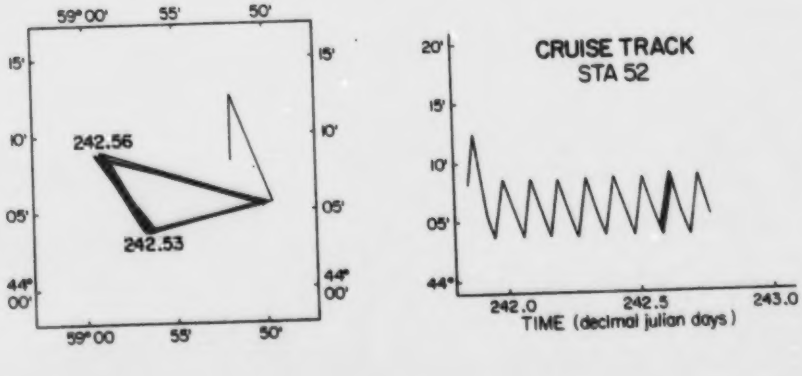
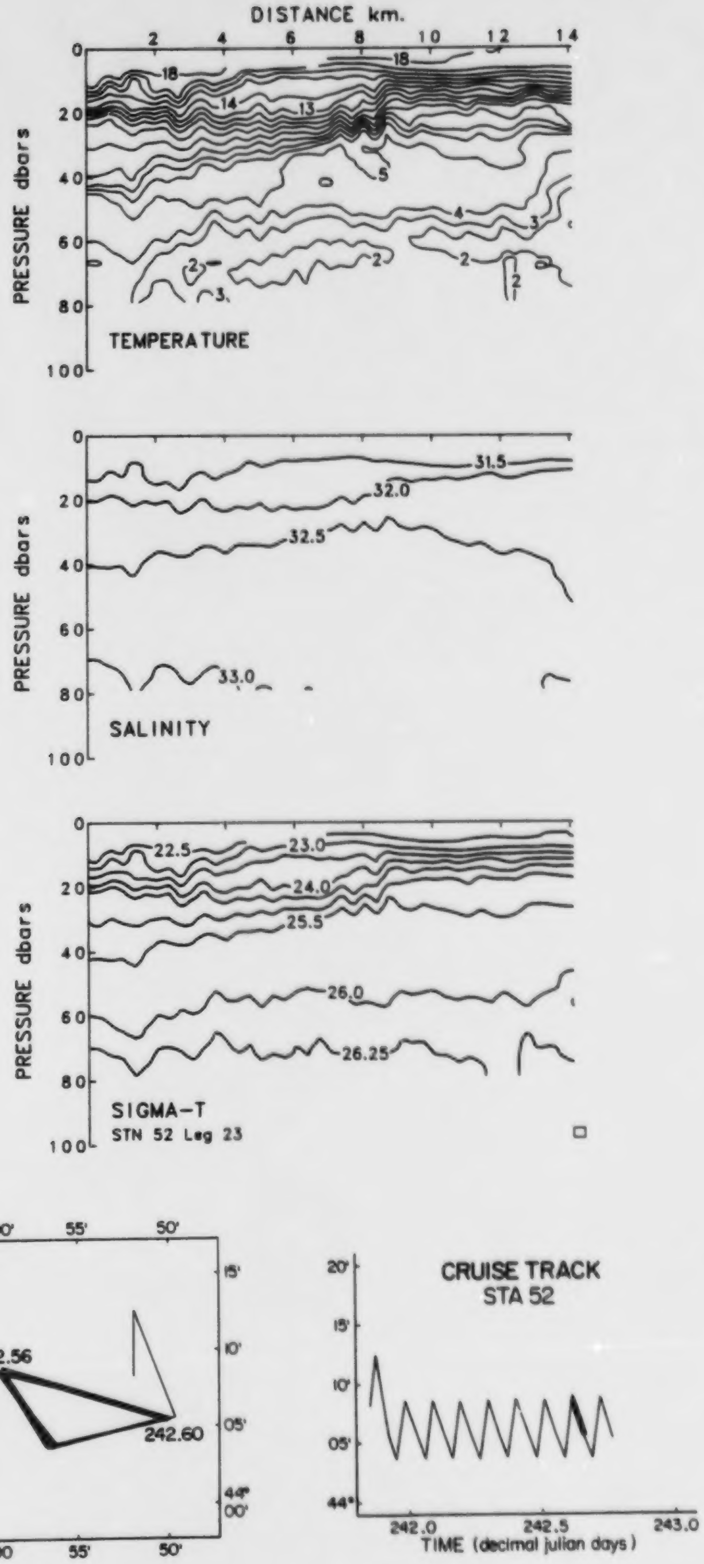

59°00'
55'
50'
15'
10'
05'
44°
00'
242.56
242.53
CRUISE TRACK
STA 52
20'
242.0
242.5
243.0
TIME (decimal julian days)

Fig. 219



DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 52 Leg 23
242.56
242.60
59°00'
55'
50'
15'
10'
05'
44° 00'
CRUISE TRACK
STA 52
20'
44°
242.0
242.5
243.0
TIME (decimal julian days)

Fig. 220

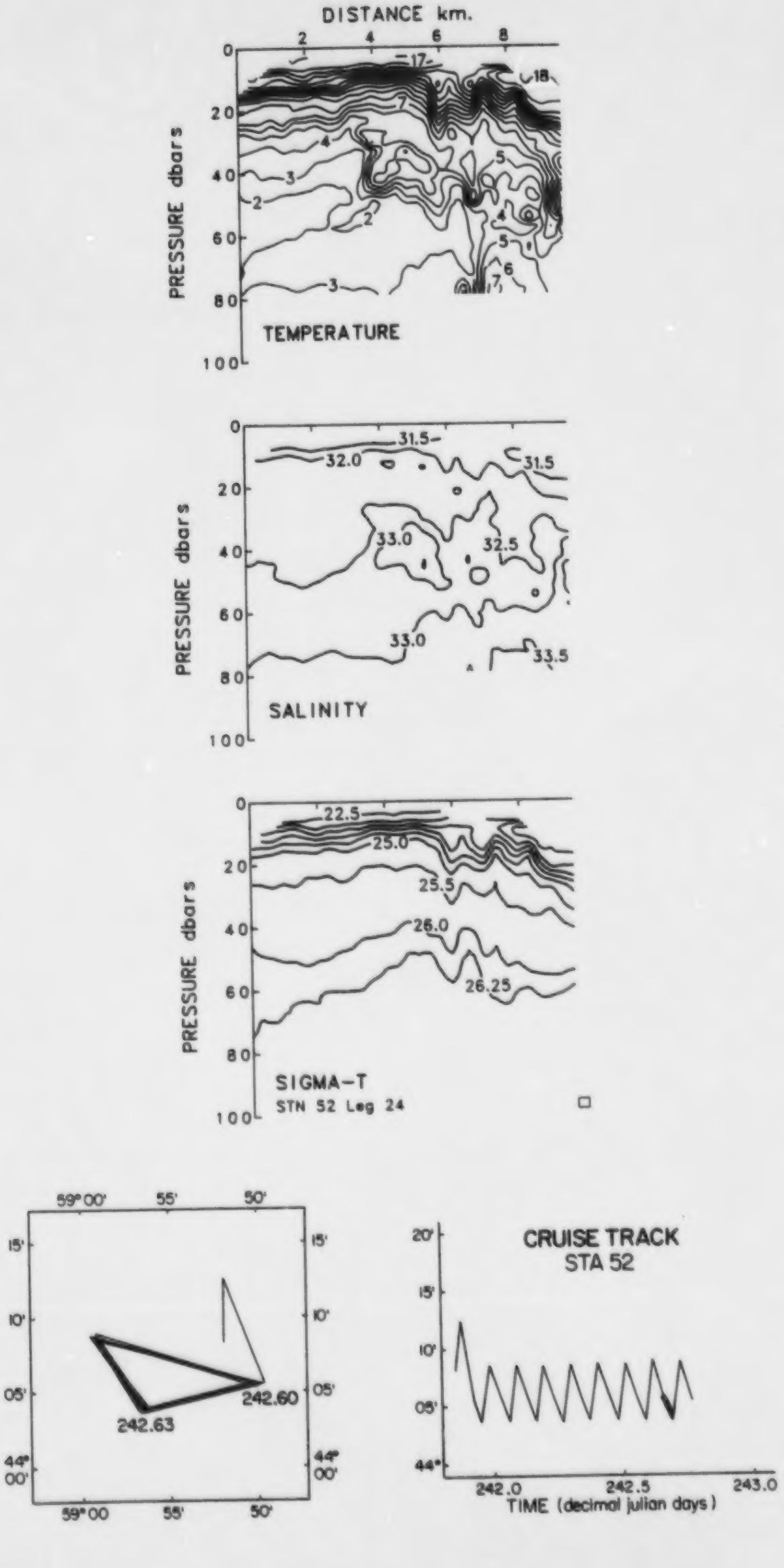

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 52 Leg 24
242.60
242.63
CRUISE TRACK
STA 52
TIME (decimal julian days)

Fig. 221

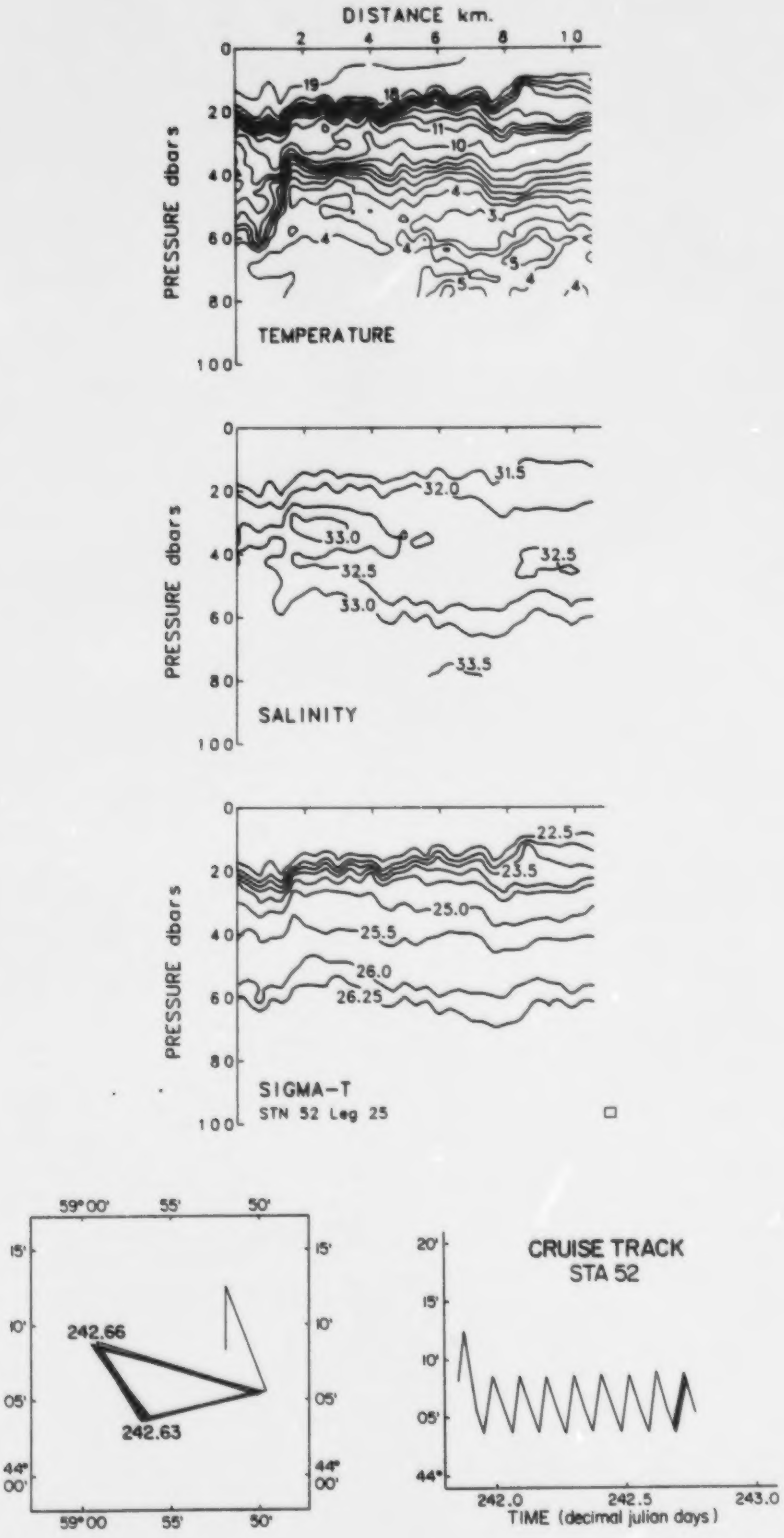

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 52 Leg 25
242.66
242.63
CRUISE TRACK
STA 52
TIME (decimal julian days)

Fig. 222

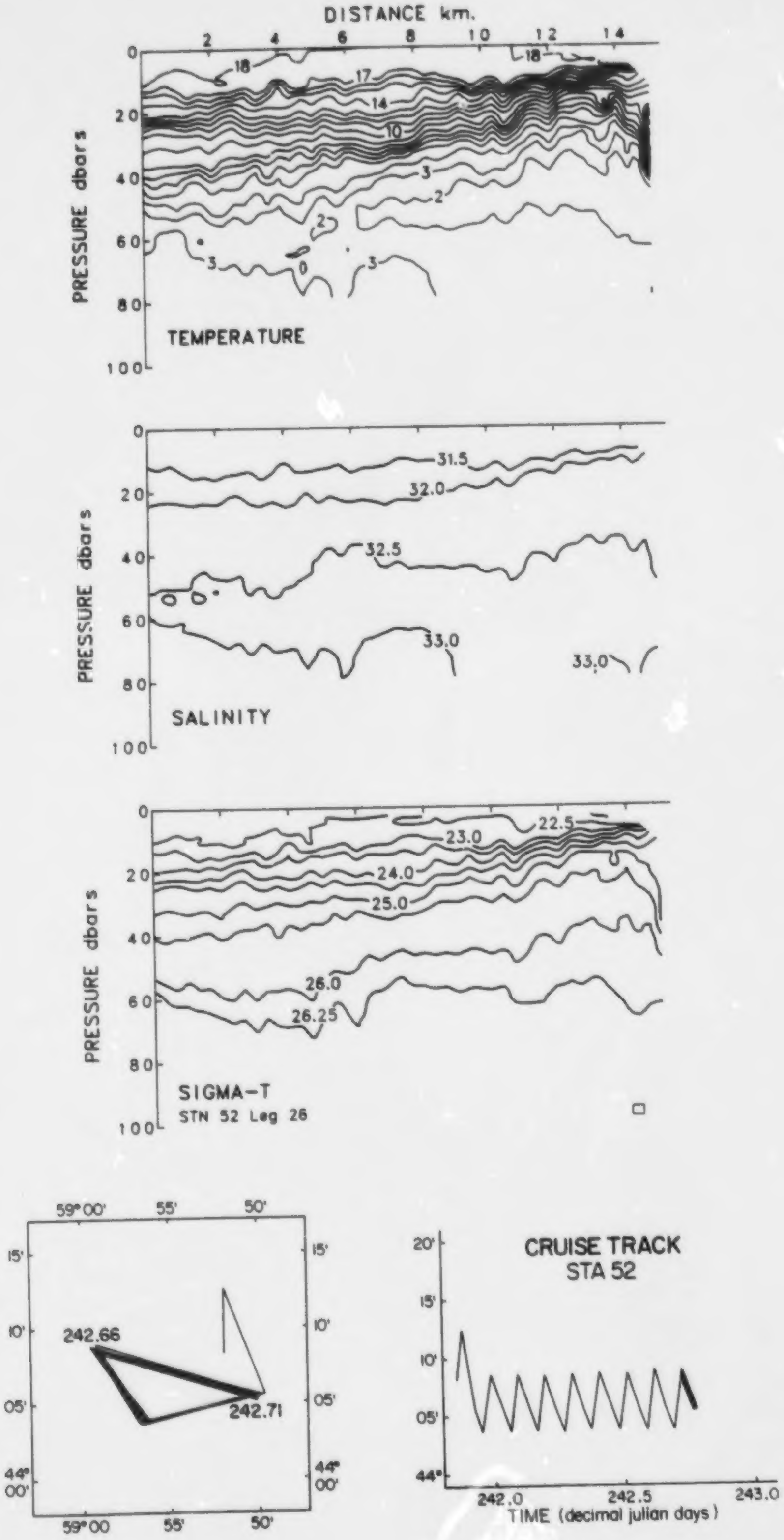
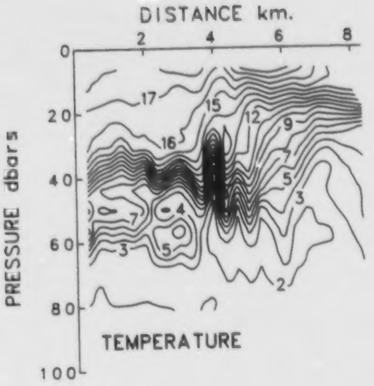
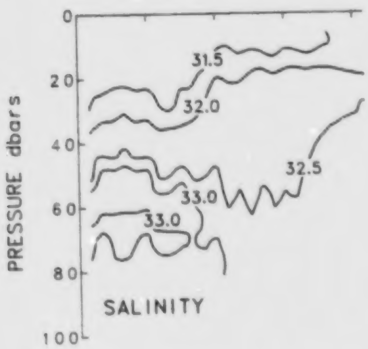

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 52 Leg 26
242.66
242.71
CRUISE TRACK
STA 52
TIME (decimal julian days)

Fig. 223

Figures 224-247.

BATFISH station 53: 15 sections of Temperature, Salinity and Sigma-t vs. pressure, location map and latitude vs. time plot. Acoustic backscatter plots for selected sections.


DISTANCE km.
2
4
6
8
0
20
40
60
80
100
PRESSURE dbars
17
15
12
9
16
5
3
4
7
3
5
2
TEMPERATURE


0
20
40
60
80
100
PRESSURE dbars
31.5
32.0
32.5
33.0
33.0
SALINITY

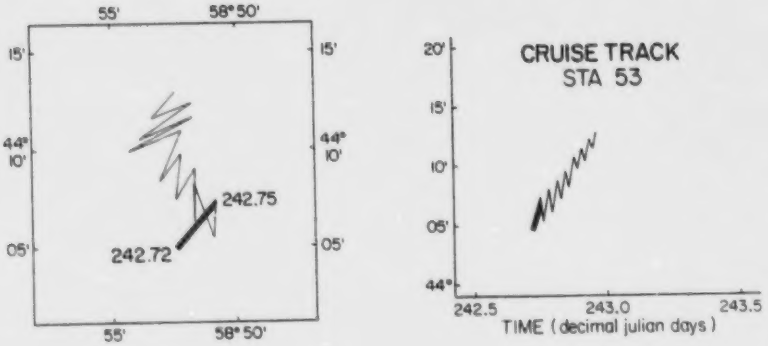

55'
58° 50'
15'
44°
10'
05'
242.75
242.72
20'
15'
10'
05'
44°
CRUISE TRACK
STA 53
242.5
243.0
243.5
TIME (decimal julian days)

Fig. 224

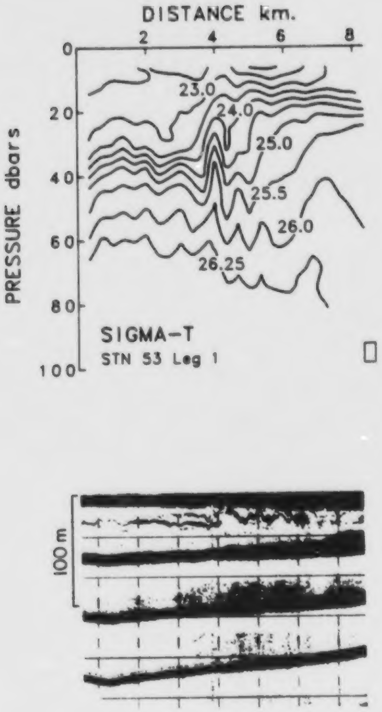
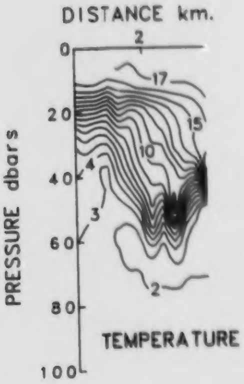
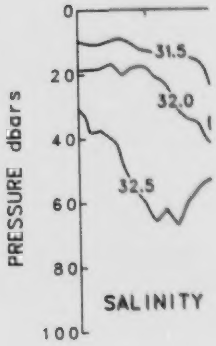
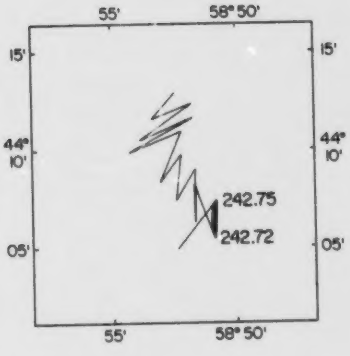

DISTANCE km.
2
4
6
8
0
20
40
60
80
100
PRESSURE dbars
23.0
24.0
25.0
25.5
26.0
26.25
SIGMA-T
STN 53 Leg 1
100 m

Fig. 225


DISTANCE km.
PRESSURE dbars
TEMPERATURE
17
15
10
4
3
2


PRESSURE dbars
SALINITY
31.5
32.0
32.5


55'
58° 50'
15'
44° 10'
05'
242.75
242.72

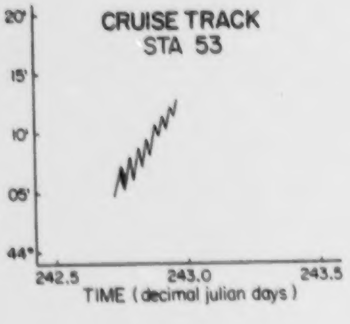

CRUISE TRACK
STA 53
20'
15'
10'
05'
44°
242.5
243.0
243.5
TIME (decimal julian days)

Fig. 226

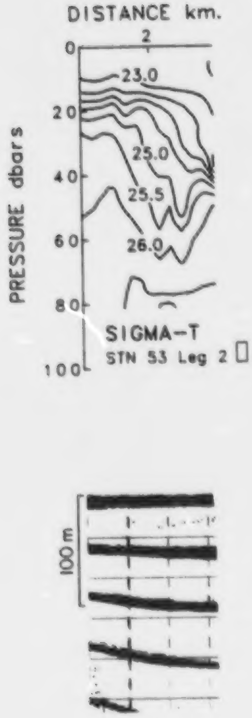
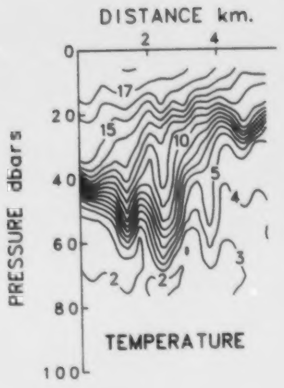
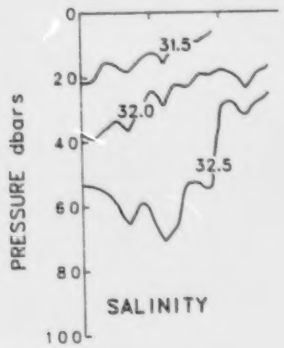
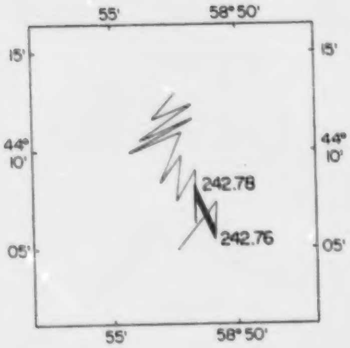

DISTANCE km.
2
0
20
40
60
80
100
PRESSURE dbars
23.0
25.0
25.5
26.0
SIGMA-T
STN 53 Leg 2
100 m

Fig. 227


DISTANCE km.
2
4
0
20
40
60
80
100
PRESSURE dbars
17
15
10
5
4
3
2
2
TEMPERATURE


0
20
40
60
80
100
PRESSURE dbars
31.5
32.0
32.5
SALINITY


55'
58° 50'
15'
44°
10'
05'
242.78
242.76

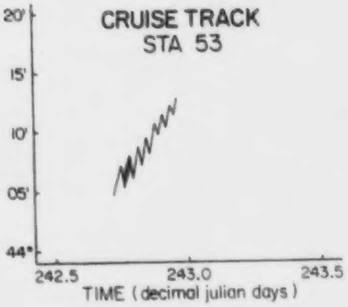

CRUISE TRACK
STA 53
20'
15'
10'
05'
44°
242.5
243.0
243.5
TIME (decimal julian days)

Fig. 228

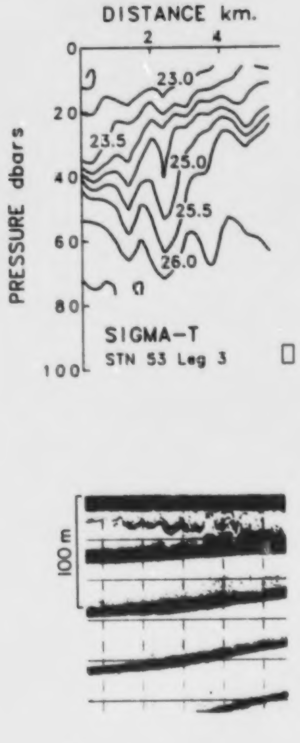

DISTANCE km.
2
4
0
20
40
60
80
100
PRESSURE dbars
23.0
23.5
25.0
25.5
26.0
SIGMA-T
STN 53 Leg 3
100 m

Fig. 229

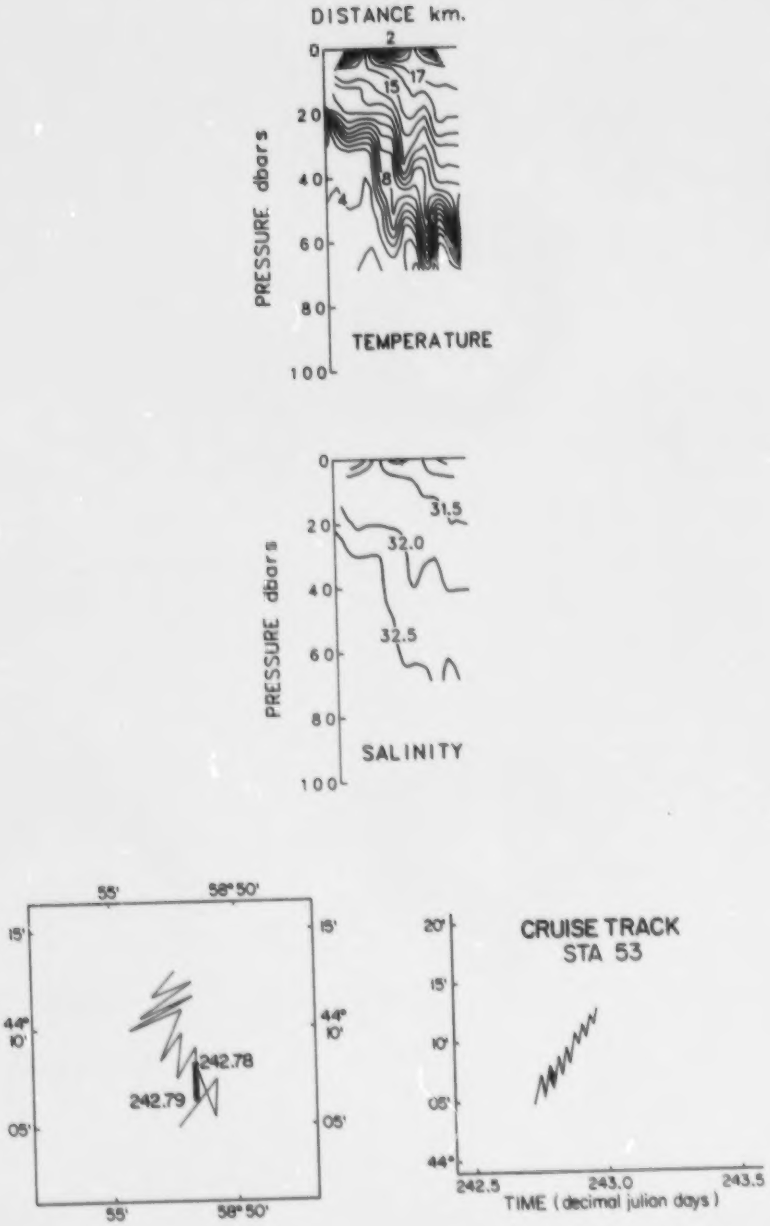
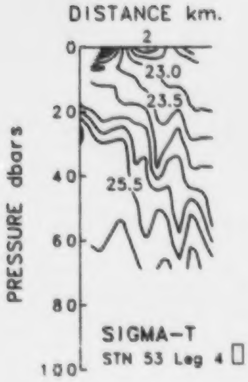

DISTANCE km.
2
PRESSURE dbars
0
20
40
60
80
100
15
17
8
4
TEMPERATURE
PRESSURE dbars
0
20
40
60
80
100
31.5
32.0
32.5
SALINITY
55'
58° 50'
15'
44°
10'
05'
242.78
242.79
CRUISE TRACK
STA 53
20'
15'
10'
05'
44°
242.5
243.0
243.5
TIME (decimal julian days)

Fig. 230


DISTANCE km.
2
0
20
40
60
80
100
PRESSURE dbars
23.0
23.5
25.5
SIGMA-T
STN 53 Leg 4

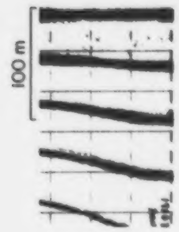

100 m

Fig. 231

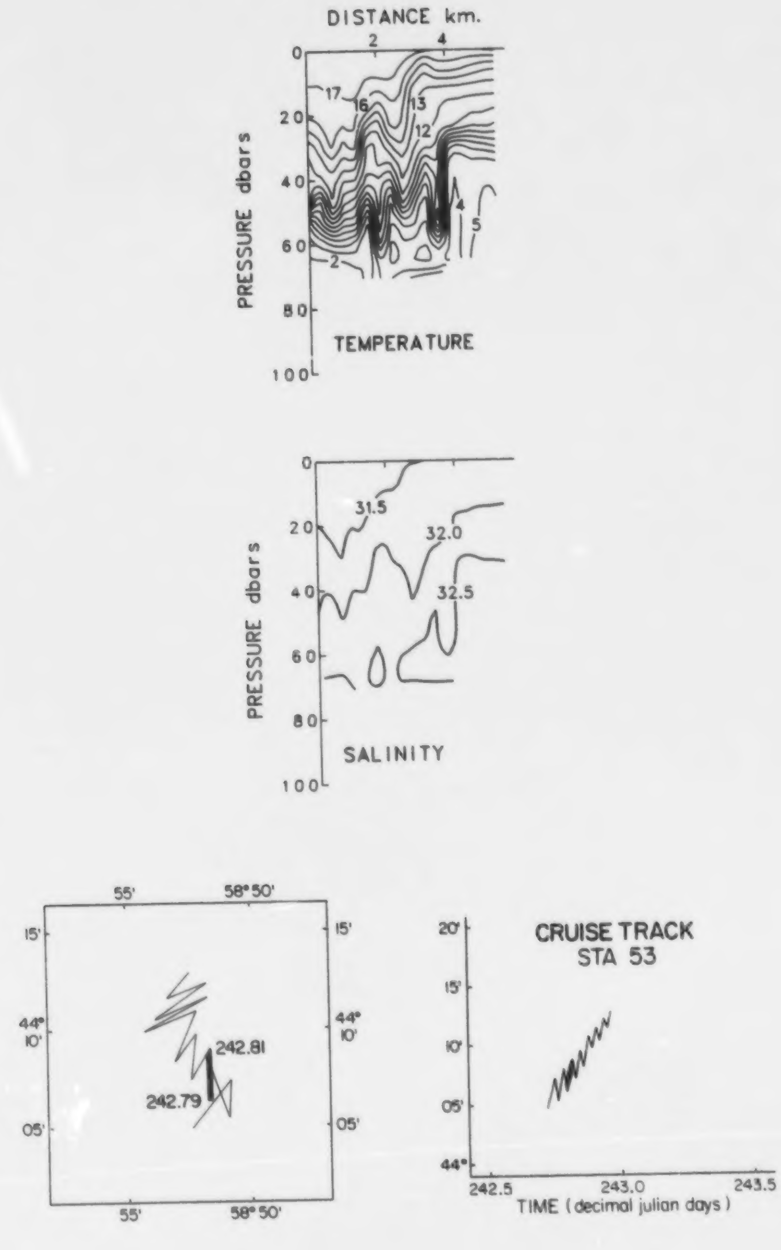

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
31.5
32.0
32.5
55'
58° 50'
15'
44° 10'
05'
242.81
242.79
CRUISE TRACK
STA 53
20'
242.5
243.0
243.5
TIME (decimal julian days)

Fig. 232

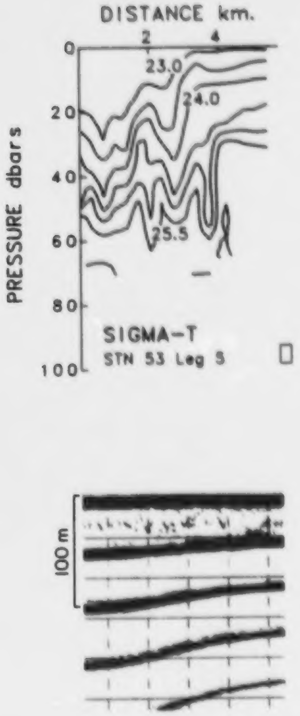
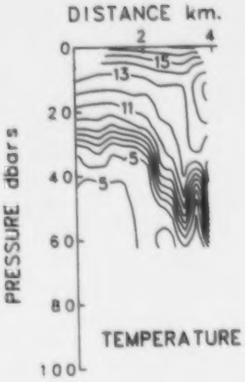
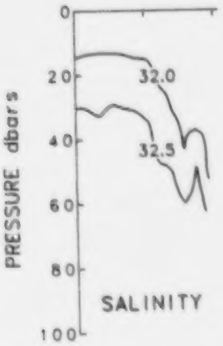
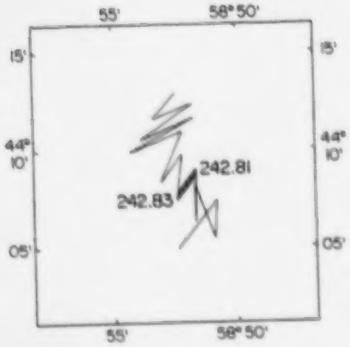

DISTANCE km.
2
4
0
20
40
60
80
100
PRESSURE dbars
23.0
24.0
25.5
SIGMA-T
STN 53 Leg 5
100m

Fig. 233


DISTANCE km.
PRESSURE dbars
TEMPERATURE
15
13
11
5
5
0
20
40
60
80
100
2
4


PRESSURE dbars
SALINITY
32.0
32.5
0
20
40
60
80
100


55'
58° 50'
15'
44°
10'
05'
242.81
242.83

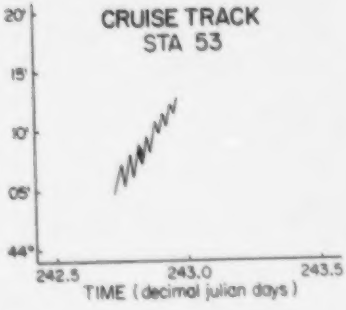
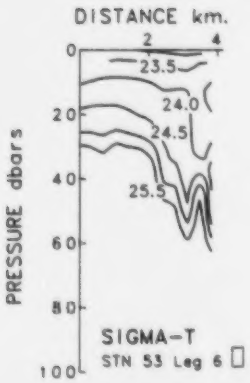

CRUISE TRACK
STA 53
20'
15'
10'
05'
44°
242.5
243.0
243.5
TIME (decimal julian days)

Fig. 234


DISTANCE km.
0
2
4
23.5
24.0
24.5
25.5
20
40
60
80
100
PRESSURE dbars
SIGMA-T
STN 53 Leg 6

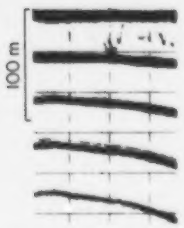

100 m

Fig. 235

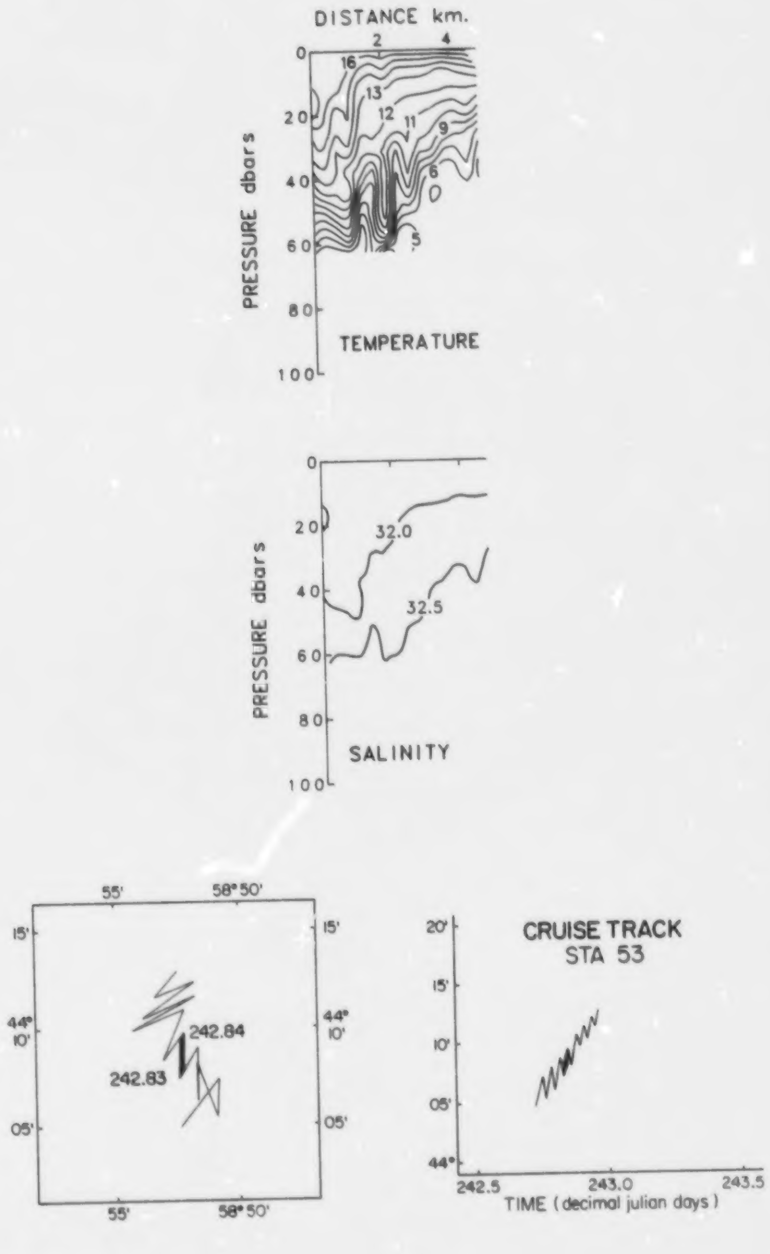

DISTANCE km.
PRESSURE dbars
TEMPERATURE
16
13
12
11
9
6
5
PRESSURE dbars
SALINITY
32.0
32.5
55'
58° 50'
15'
44° 10'
05'
242.84
242.83
CRUISE TRACK
STA 53
20'
15'
10'
05'
44°
242.5
243.0
243.5
TIME (decimal julian days)

Fig. 236

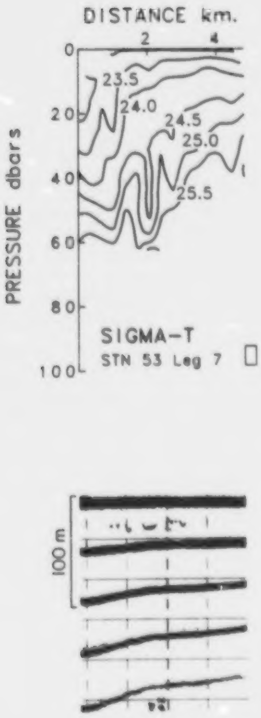

DISTANCE km.
2
4
0
20
40
60
80
100
PRESSURE dbars
23.5
24.0
24.5
25.0
25.5
SIGMA-T
STN 53 Leg 7
100 m

Fig. 237

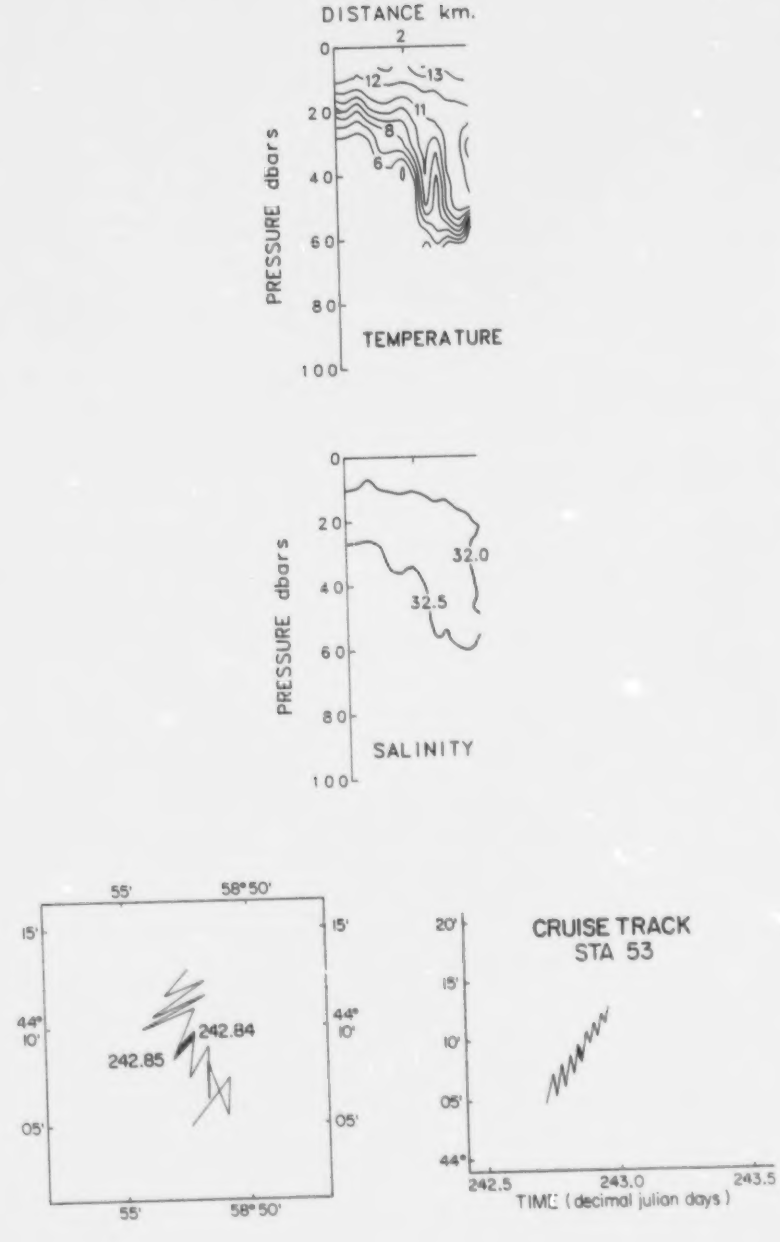

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
32.0
32.5
55'
58° 50'
15'
44°
10'
05'
242.84
242.85
CRUISE TRACK
STA 53
20'
15'
10'
05'
44°
242.5
243.0
243.5
TIME (decimal julian days)

Fig. 238

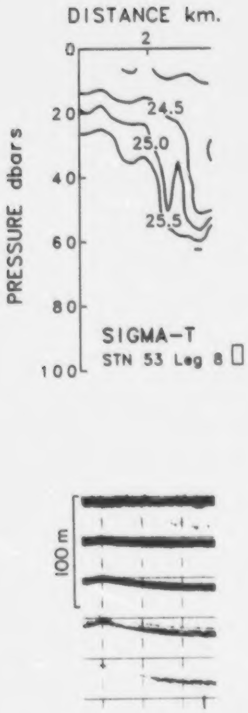
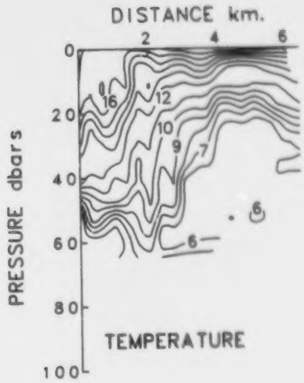
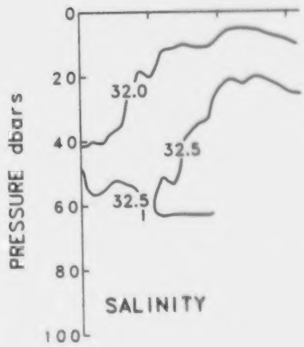
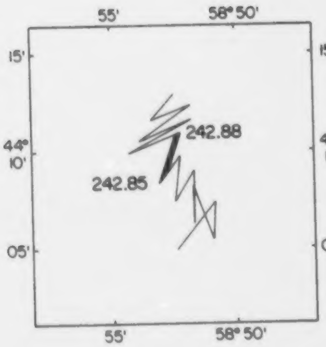

DISTANCE km.
2
0
20
40
60
80
100
PRESSURE dbars
24.5
25.0
25.5
SIGMA-T
STN 53 Leg 8
100 m

Fig. 239


DISTANCE km.
2
4
6
0
20
40
60
80
100
PRESSURE dbars
16
12
10
9
7
6
6
TEMPERATURE


0
20
40
60
80
100
PRESSURE dbars
32.0
32.5
32.5
SALINITY


55'
58° 50'
15'
44° 10'
05'
242.88
242.85

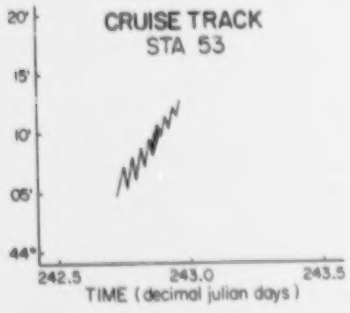

CRUISE TRACK
STA 53
20'
15'
10'
05'
44°
242.5
243.0
243.5
TIME (decimal julian days)

Fig. 240

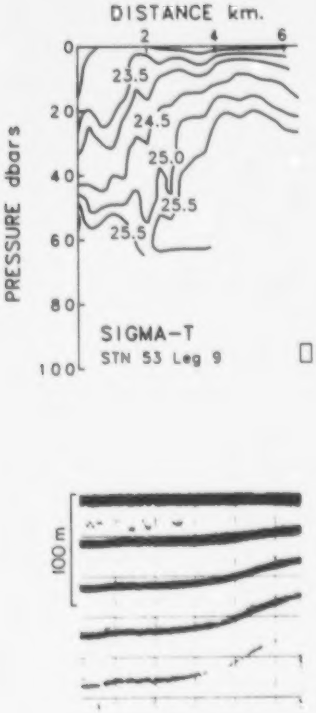
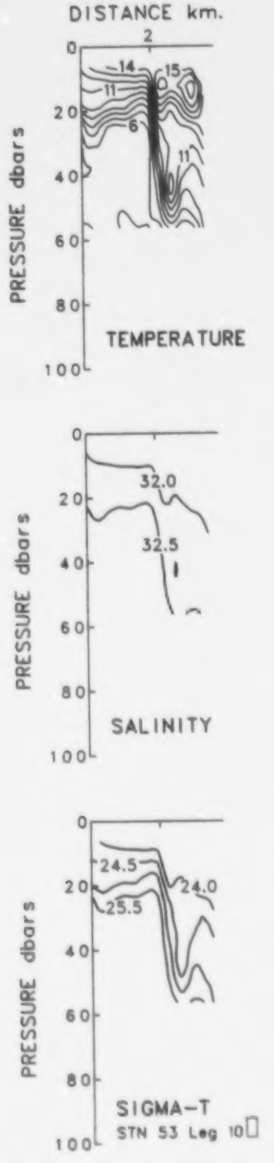
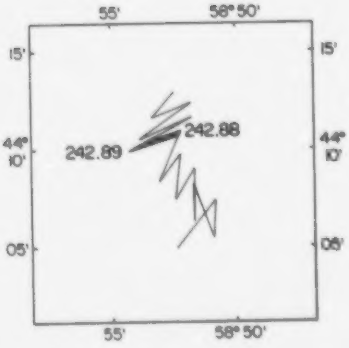

DISTANCE km.
2
4
6
0
20
40
60
80
100
PRESSURE dbars
23.5
24.5
25.0
25.5
25.5
SIGMA-T
STN 53 Leg 9
100 m

Fig. 241


DISTANCE km.
2
14
15
11
6
11
PRESSURE dbars
0
20
40
60
80
100
TEMPERATURE
32.0
32.5
SALINITY
24.5
24.0
25.5
SIGMA-T
STN 53 Leg 10


55'
58° 50'
15'
44°
10'
05'
242.89
242.88

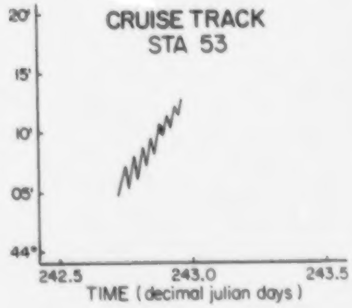

CRUISE TRACK
STA 53
20'
15'
10'
05'
44°
242.5
243.0
243.5
TIME (decimal julian days)

Fig. 242

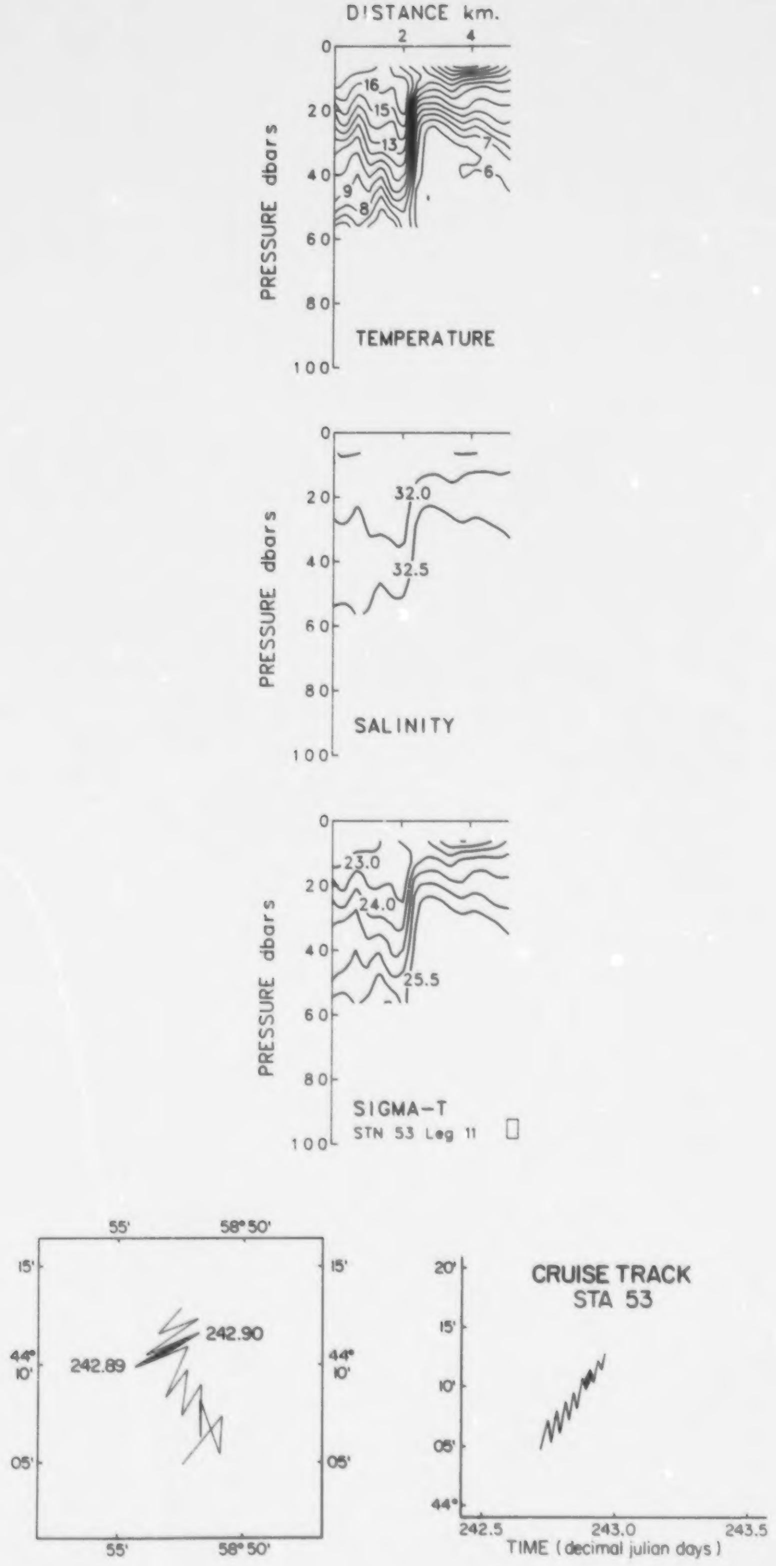

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 53 Leg 11
242.89
242.90
CRUISE TRACK
STA 53
TIME (decimal julian days)

Fig. 243

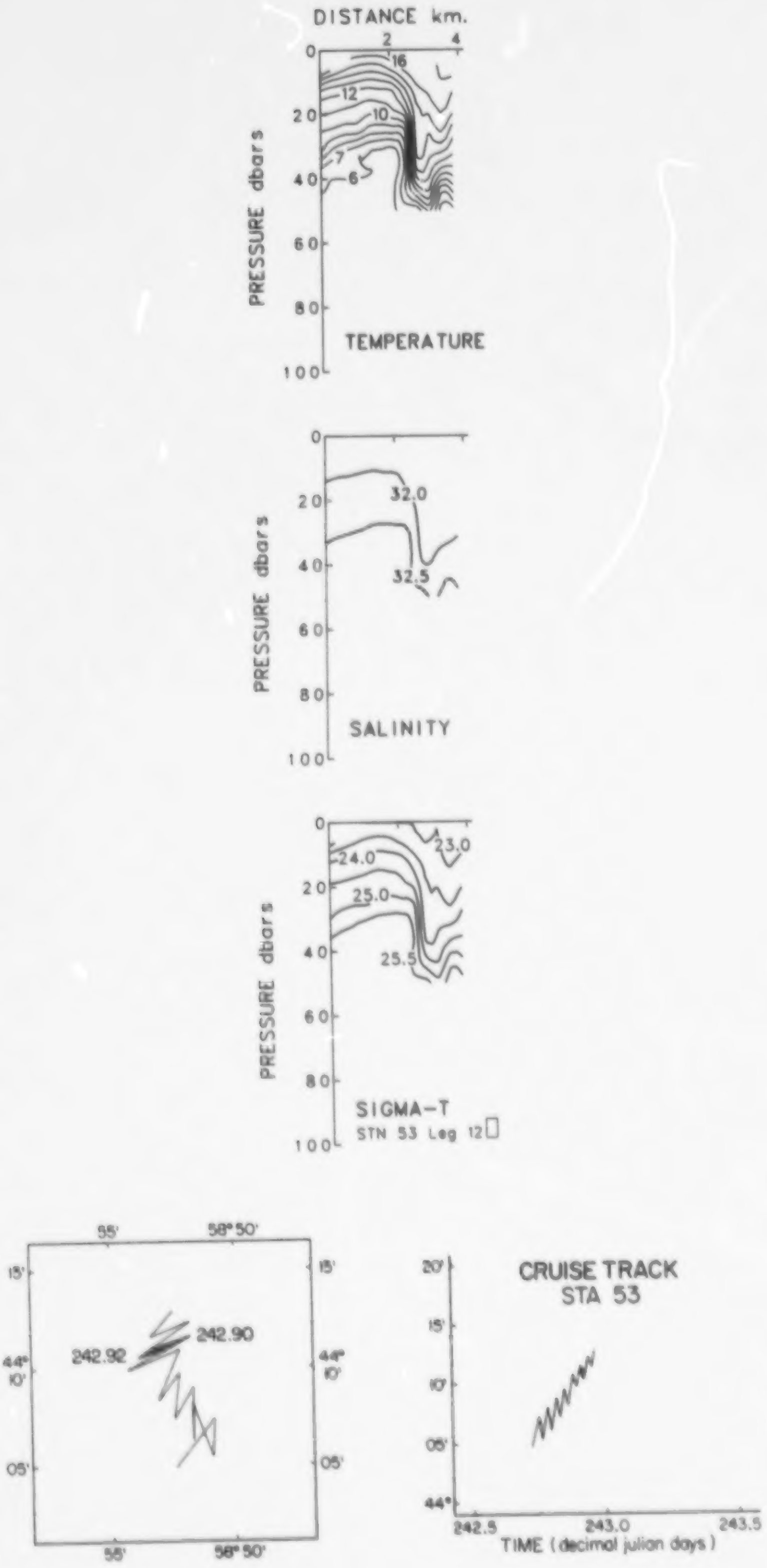

DISTANCE km.
0
2
4
16
12
10
7
6
20
40
60
80
100
PRESSURE dbars
TEMPERATURE
32.0
32.5
SALINITY
24.0
23.0
25.0
25.5
SIGMA-T
STN 53 Leg 12
55'
58° 50'
15'
44°
10'
05'
242.92
242.90
CRUISE TRACK
STA 53
20'
242.5
243.0
243.5
TIME (decimal julian days)

Fig. 244

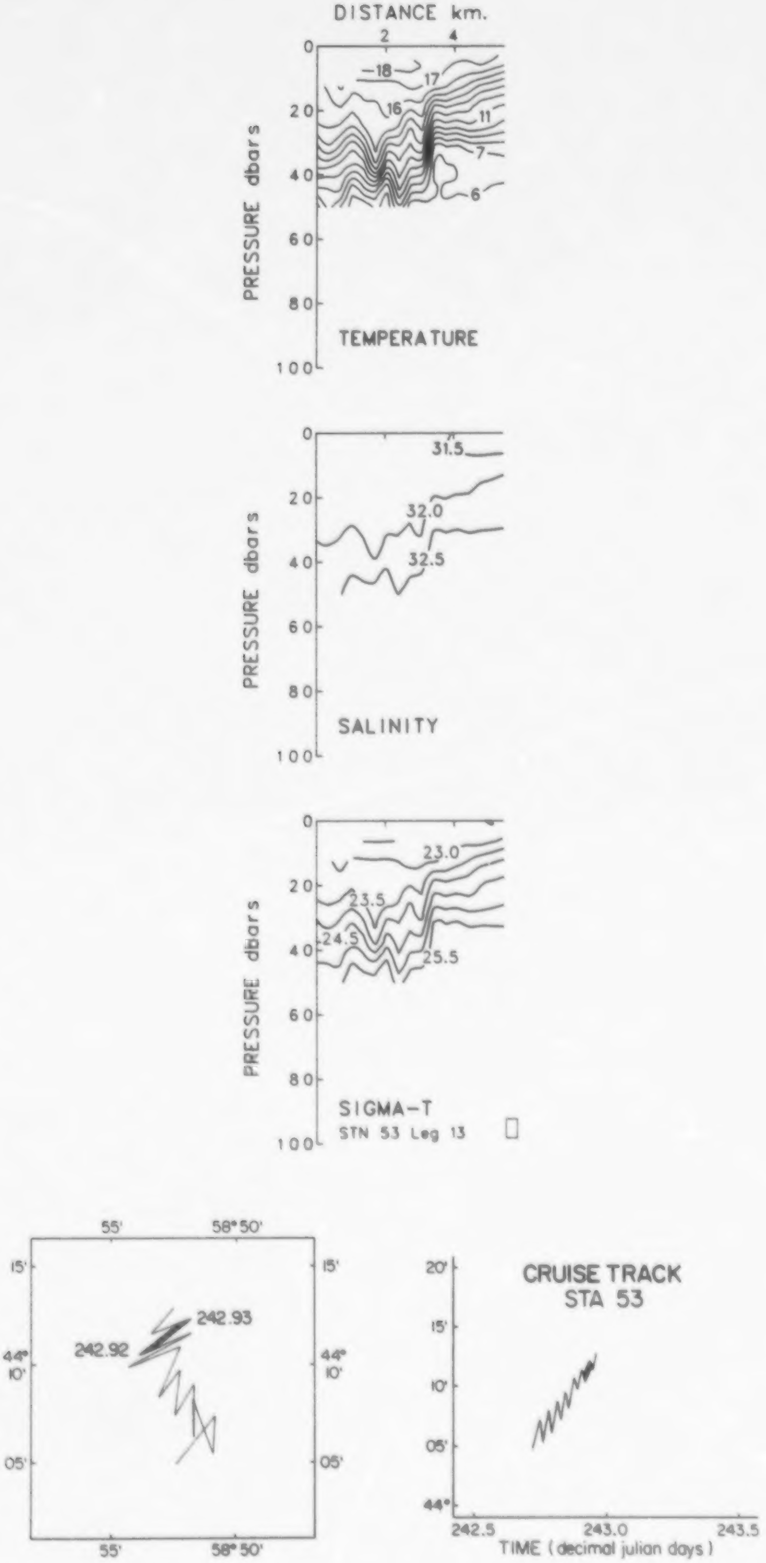

DISTANCE km.
2
4
PRESSURE dbars
TEMPERATURE
18
17
16
11
7
6
SALINITY
31.5
32.0
32.5
SIGMA-T
STN 53 Leg 13
23.0
23.5
24.5
25.5
55'
58° 50'
15'
44° 10'
05'
242.92
242.93
CRUISE TRACK
STA 53
20'
15'
10'
05'
44°
242.5
243.0
243.5
TIME (decimal julian days)

Fig. 245

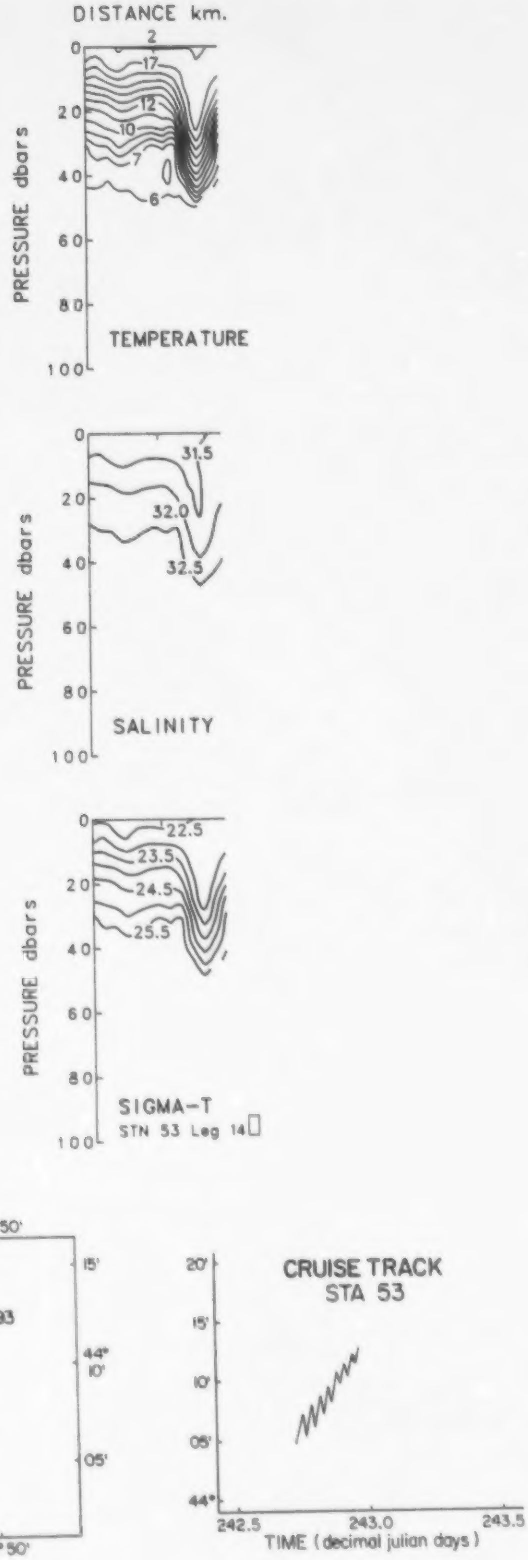

DISTANCE km.
PRESSURE dbars
TEMPERATURE
2
17
12
10
7
6
0
20
40
60
80
100
PRESSURE dbars
SALINITY
31.5
32.0
32.5
PRESSURE dbars
SIGMA-T
STN 53 Leg 14
22.5
23.5
24.5
25.5
55'
58° 50'
15'
44° 10'
05'
242.95
242.93
CRUISE TRACK
STA 53
20'
15'
10'
05'
44°
242.5
243.0
243.5
TIME (decimal julian days)

Fig. 246

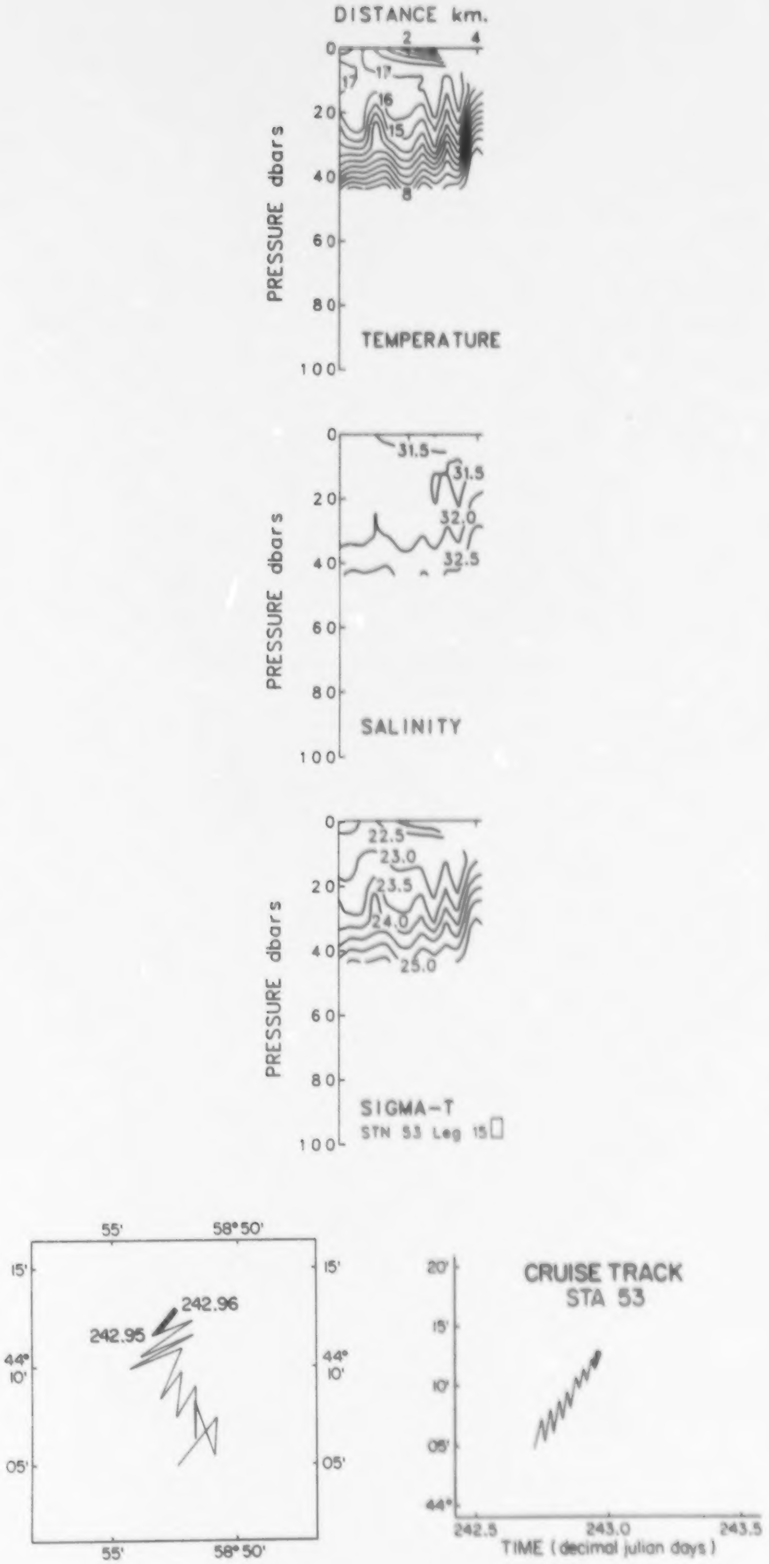
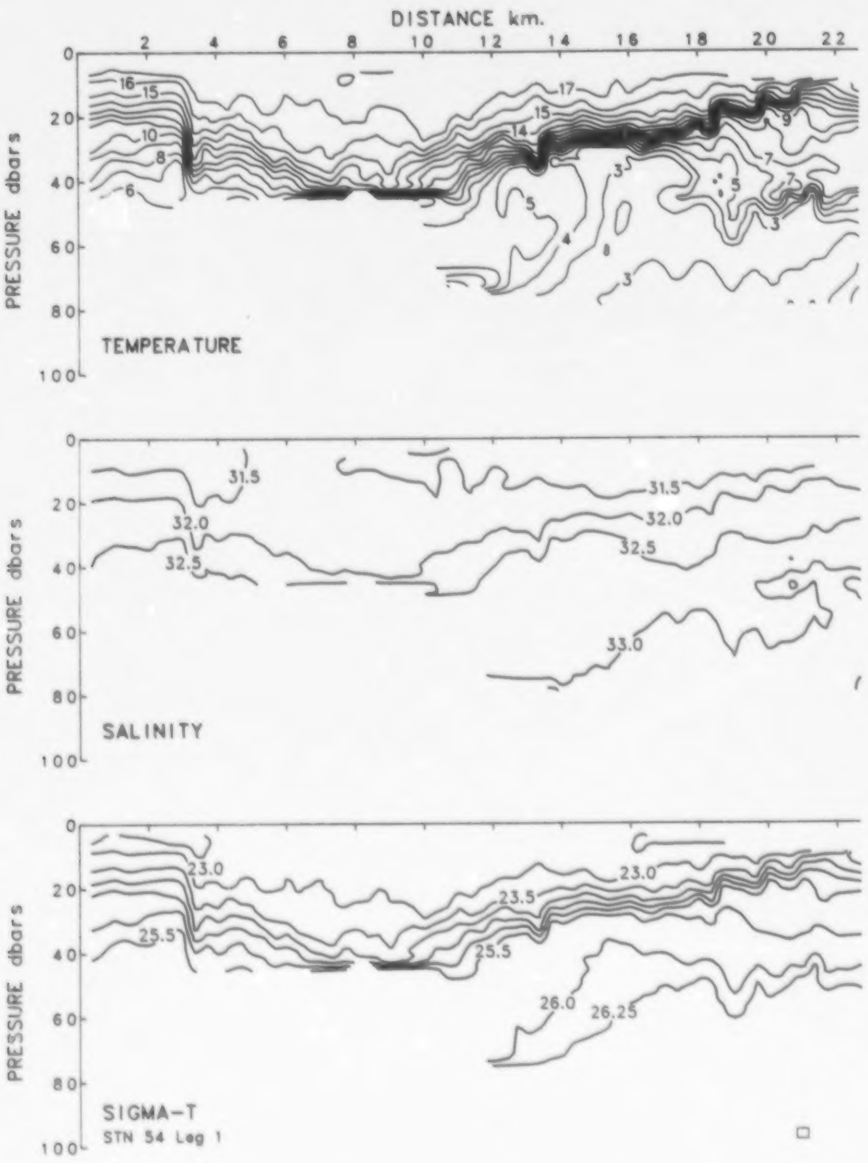

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 53 Leg 15
CRUISE TRACK
STA 53
242.96
242.95
TIME (decimal julian days)

Fig. 247

Figures 248-258.

BATFISH station 54: 11 sections of Temperature, Salinity and Sigma-t vs. pressure, location map and Sigma-t vs. pressure, location map and longitude vs. time plot.


DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 54 Leg 1

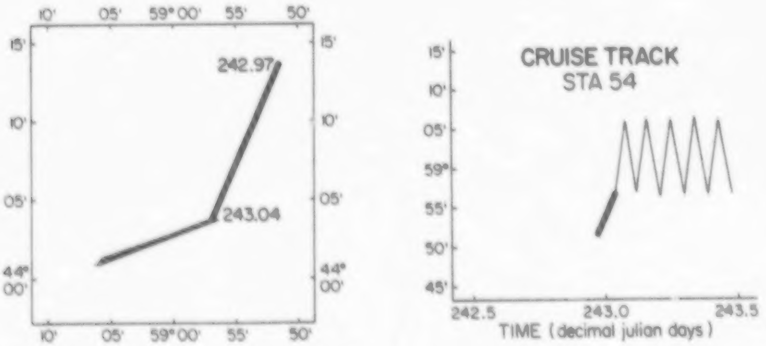

242.97
243.04
CRUISE TRACK
STA 54
TIME (decimal julian days)

Fig. 248

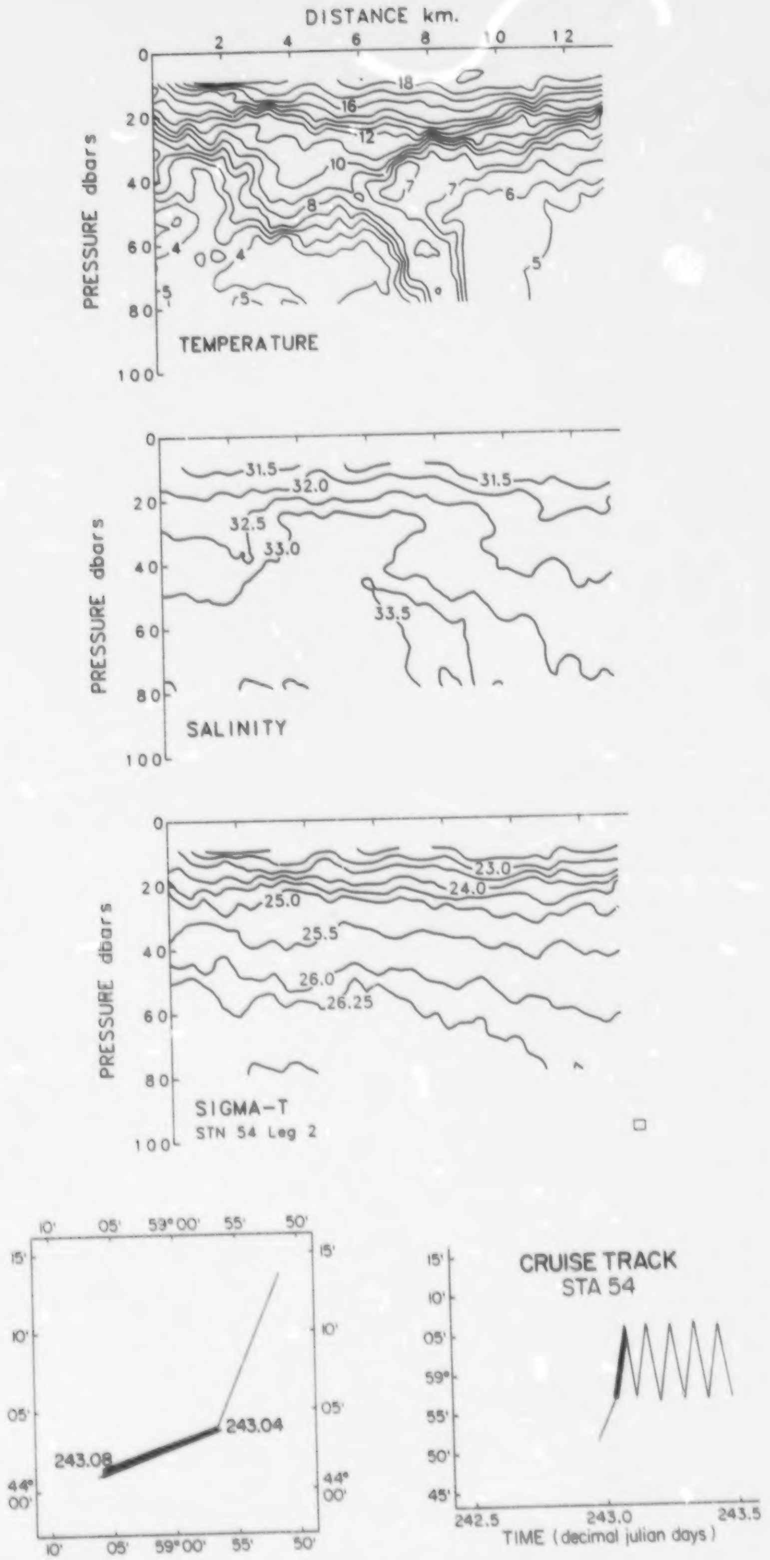

DISTANCE km.
2 4 6 8 10 12
PRESSURE dbars
0 20 40 60 80 100
18 16 12 10 8 7 6 5 4
TEMPERATURE
31.5 32.0 32.5 33.0 33.5
SALINITY
23.0 24.0 25.0 25.5 26.0 26.25
SIGMA-T
STN 54 Leg 2
10' 05' 59° 00' 55' 50'
15' 10' 05' 44° 00'
243.08
243.04
CRUISE TRACK
STA 54
15' 10' 05' 59° 55' 50' 45'
242.5 243.0 243.5
TIME (decimal julian days)

Fig. 249

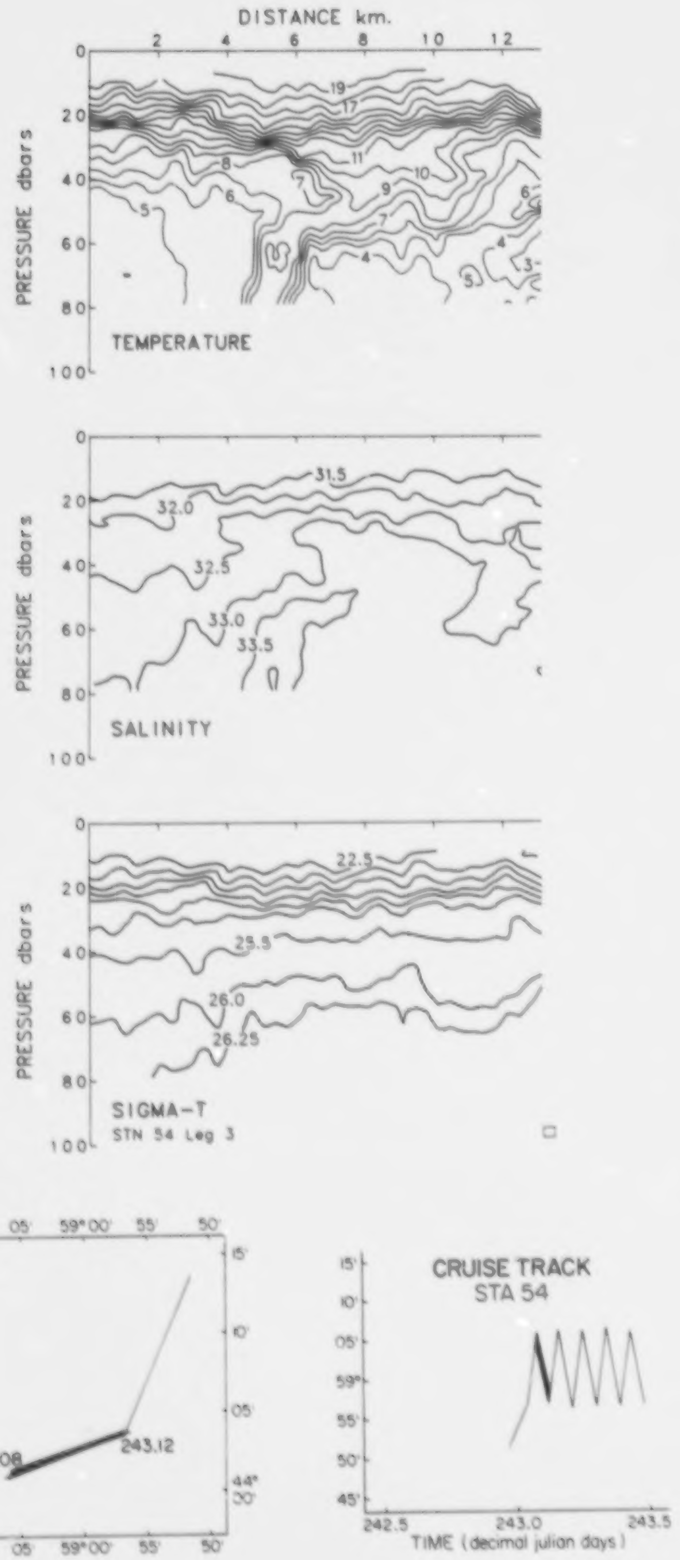

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
PRESSURE dbars
SIGMA-T
STN 54 Leg 3
243.08
243.12
CRUISE TRACK
STA 54
TIME (decimal julian days)

Fig. 250

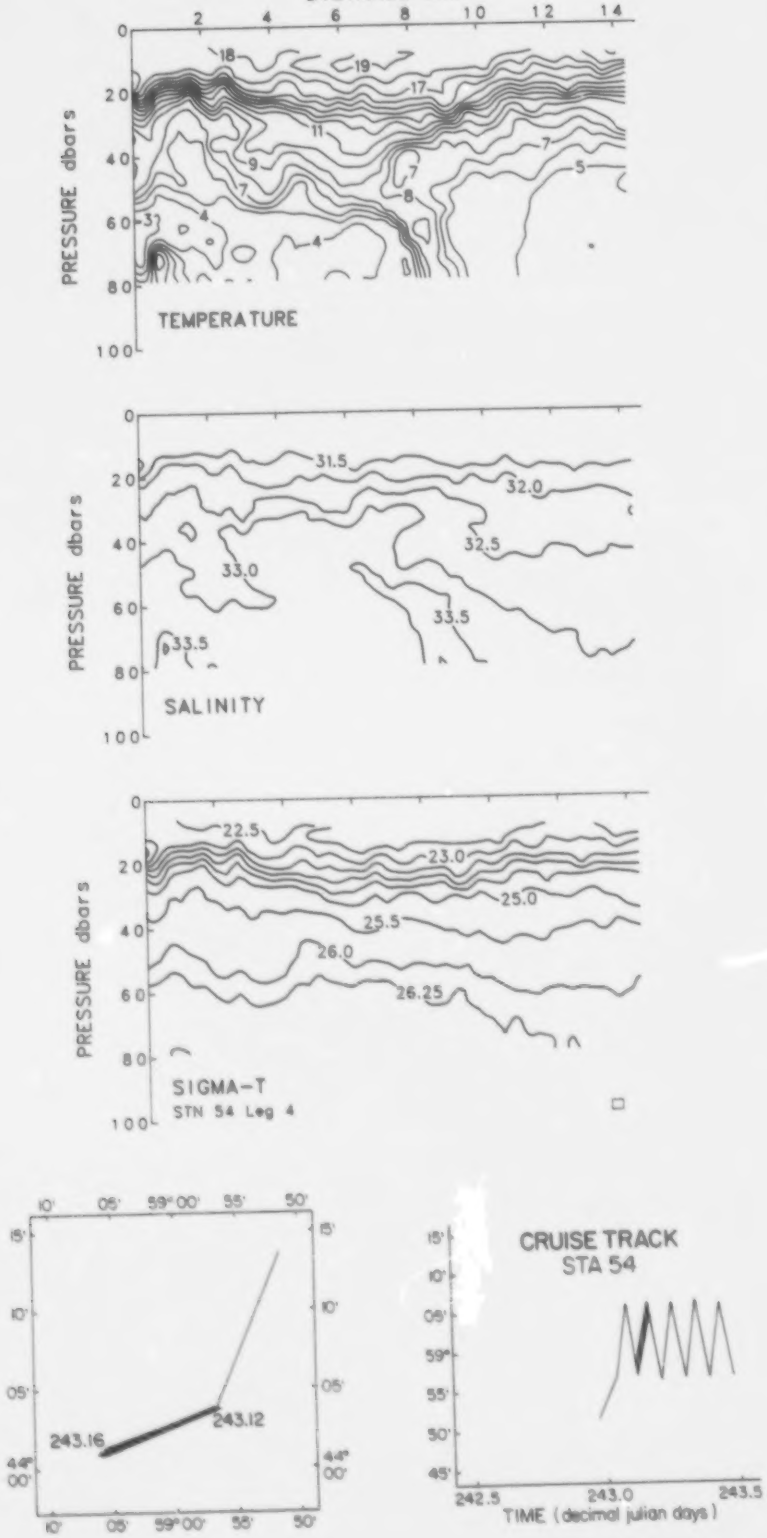

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 54 Leg 4
243.16
243.12
CRUISE TRACK
STA 54
TIME (decimal julian days)

Fig. 251

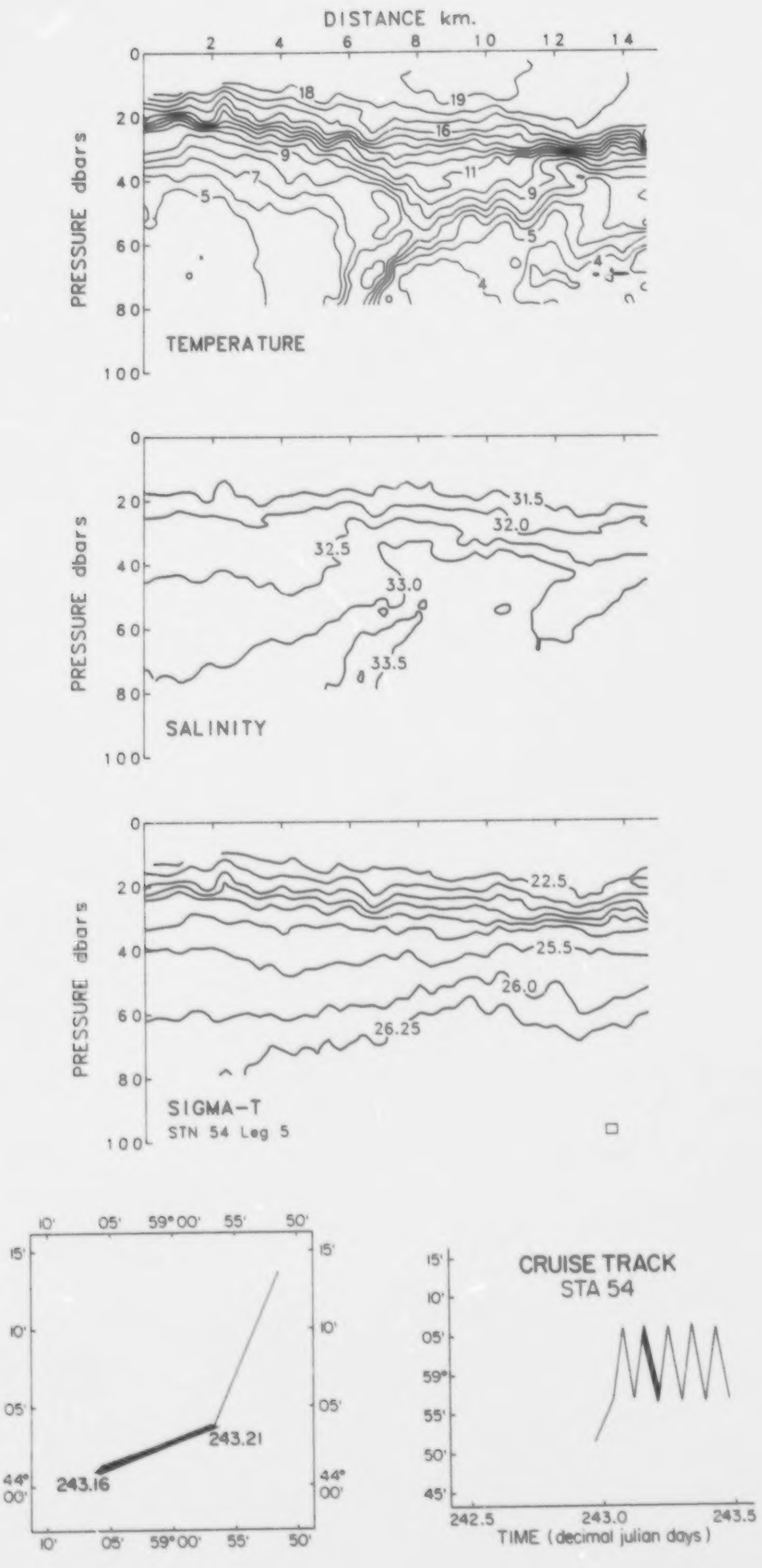
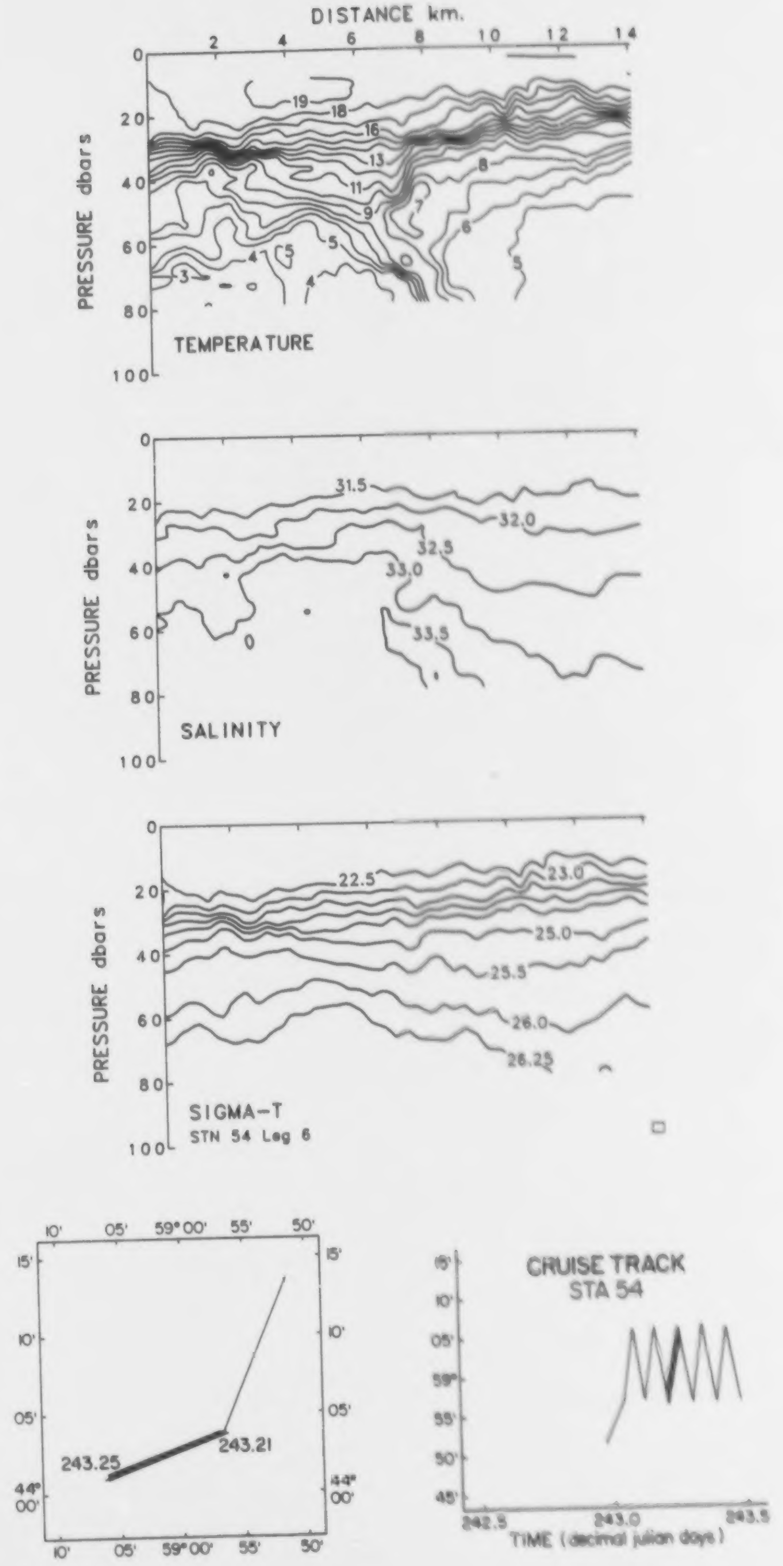

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 54 Leg 5
243.21
243.16
CRUISE TRACK
STA 54
TIME (decimal julian days)

Fig. 252



DISTANCE km.
2 4 6 8 10 12 14
PRESSURE dbars
0 20 40 60 80 100
19 18 16 13 11 9 8 7 6 5 4 3
TEMPERATURE
31.5 32.0 32.5 33.0 33.5
SALINITY
22.5 23.0 25.0 25.5 26.0 26.25
SIGMA-T
STN 54 Leg 6
10' 05' 59°00' 55' 50'
15' 10' 05' 44° 00'
243.25
243.21
CRUISE TRACK
STA 54
15' 10' 05' 59° 55' 50' 45'
242.5 243.0 243.5
TIME (decimal julian days)

Fig. 253

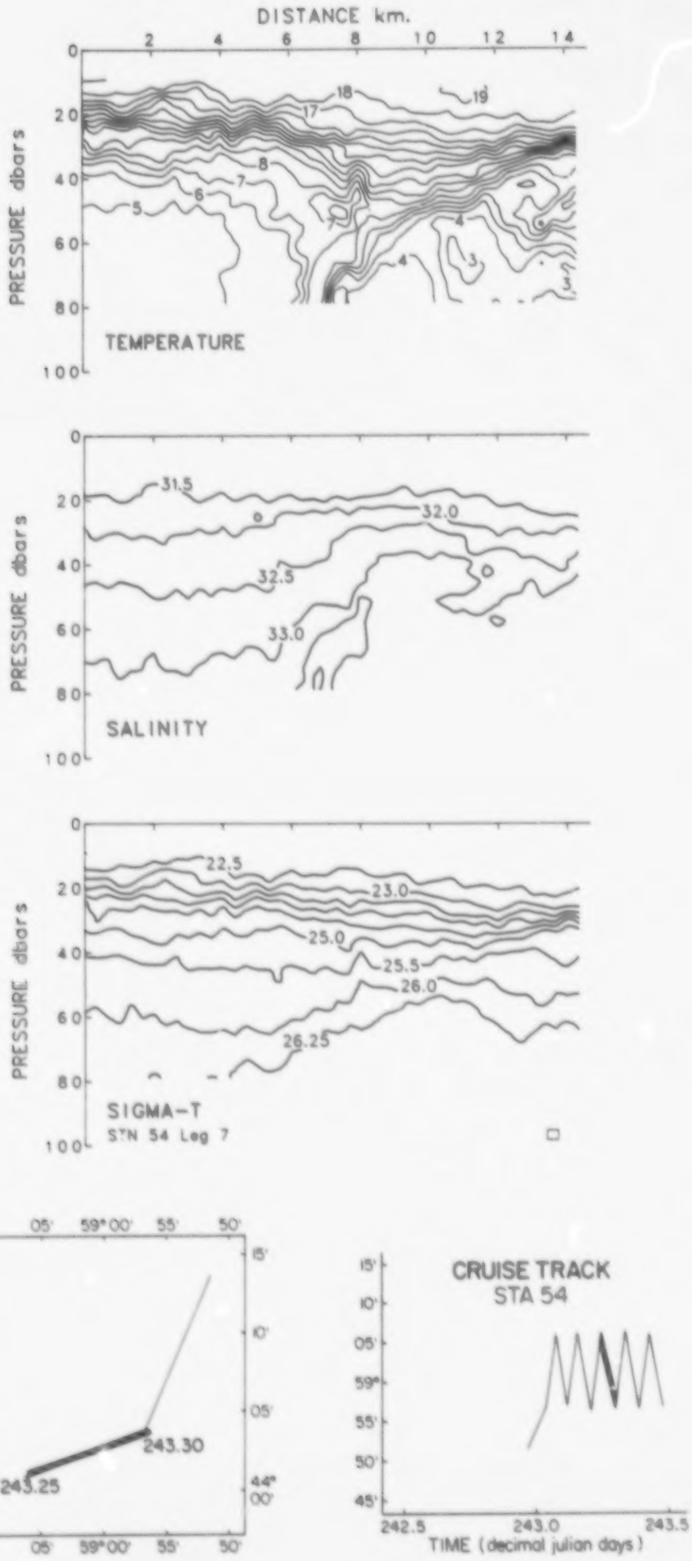

DISTANCE km.
2 4 6 8 10 12 14
PRESSURE dbars
0 20 40 60 80 100
TEMPERATURE
18
17
19
8
7
6
5
4
3
SALINITY
31.5
32.0
32.5
33.0
SIGMA-T
STN 54 Leg 7
22.5
23.0
25.0
25.5
26.0
26.25
10' 05' 59°00' 55' 50'
15' 10' 05' 44° 00'
243.25
243.30
CRUISE TRACK
STA 54
15' 10' 05' 59° 55' 50' 45'
242.5 243.0 243.5
TIME (decimal julian days)

Fig. 254

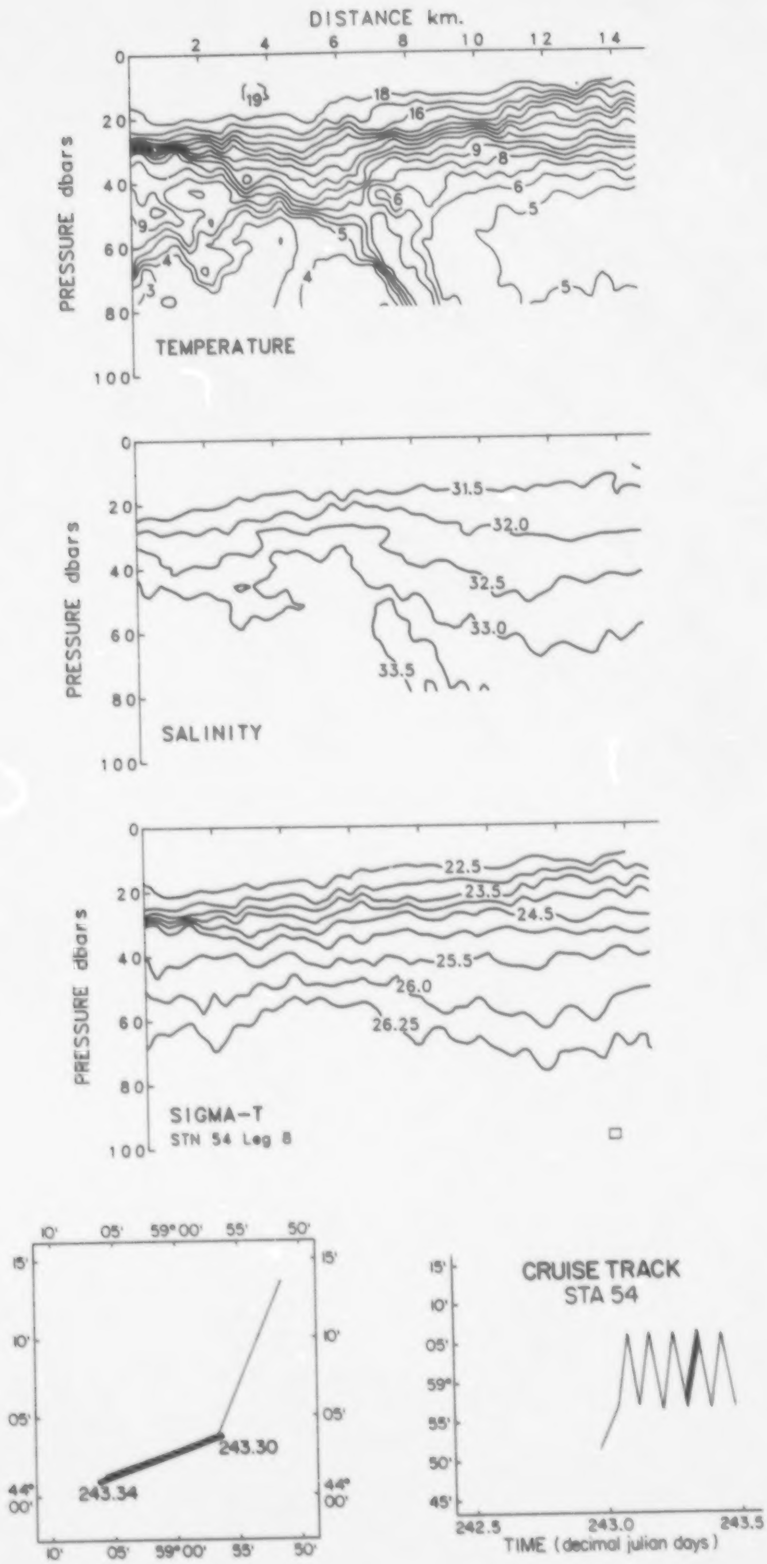

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 54 Leg 8
CRUISE TRACK
STA 54
243.30
243.34
TIME (decimal julian days)

Fig. 255

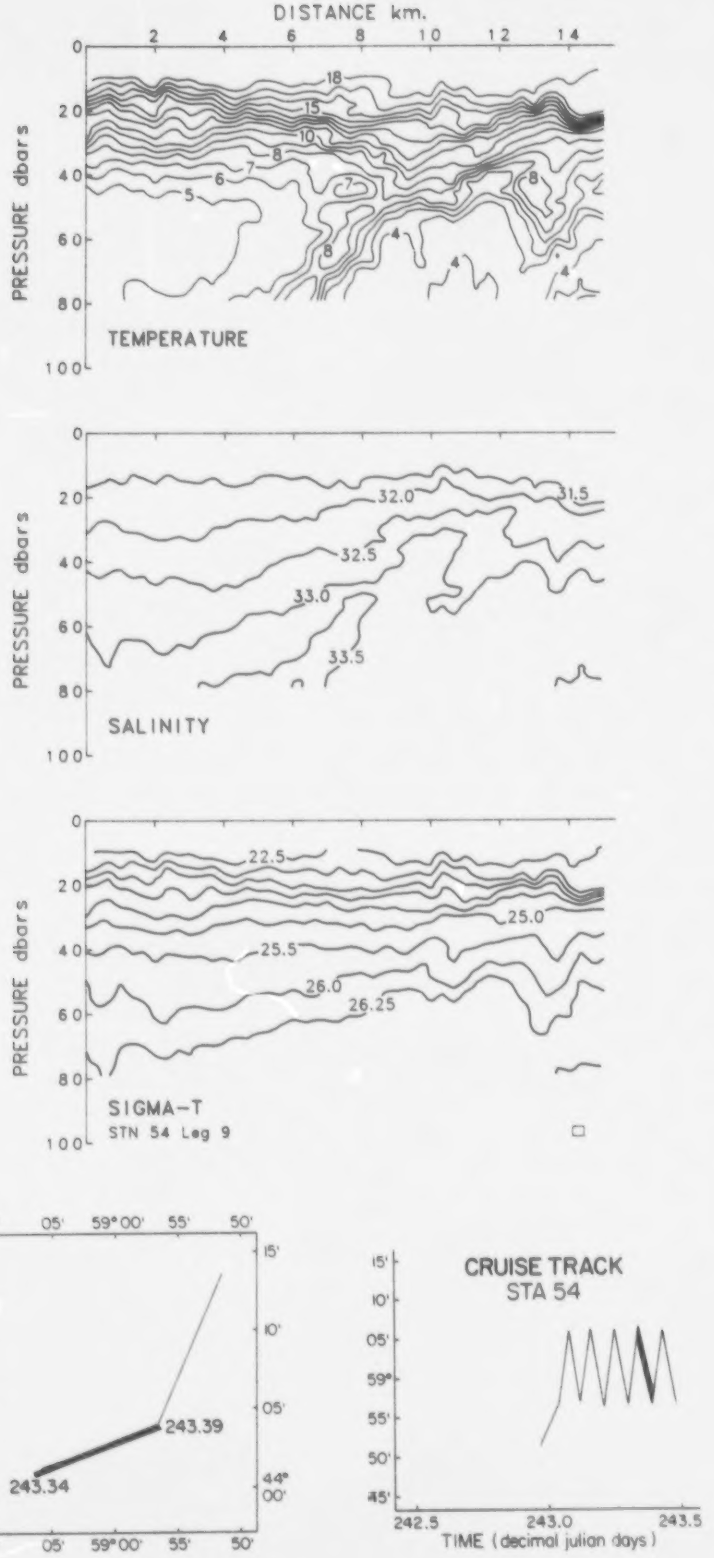

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 54 Leg 9
CRUISE TRACK
STA 54
243.39
243.34
TIME (decimal julian days)

Fig. 256

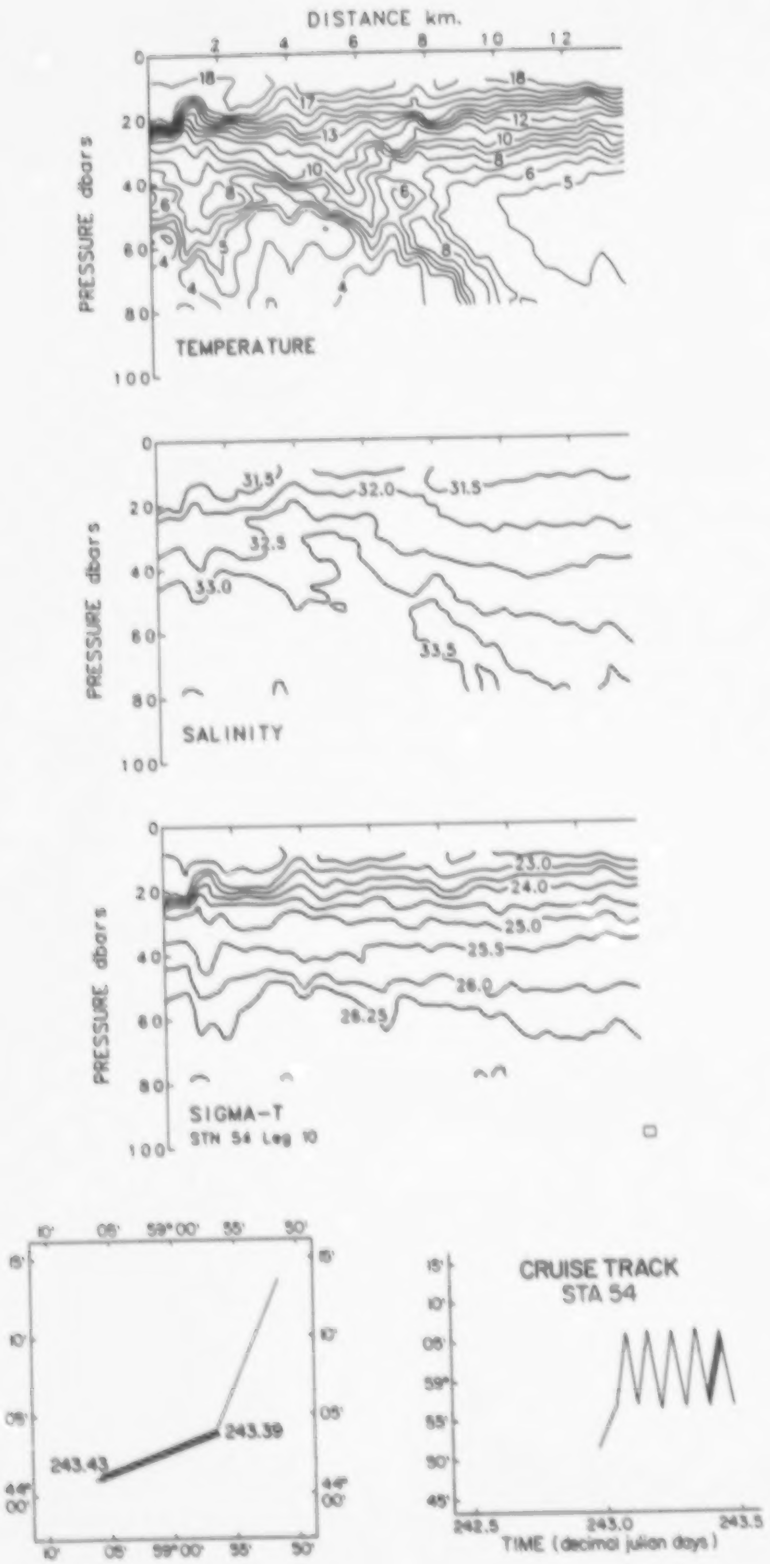

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 54 Leg 10
243.43
243.39
CRUISE TRACK
STA 54
TIME (decimal julian days)

Fig. 257

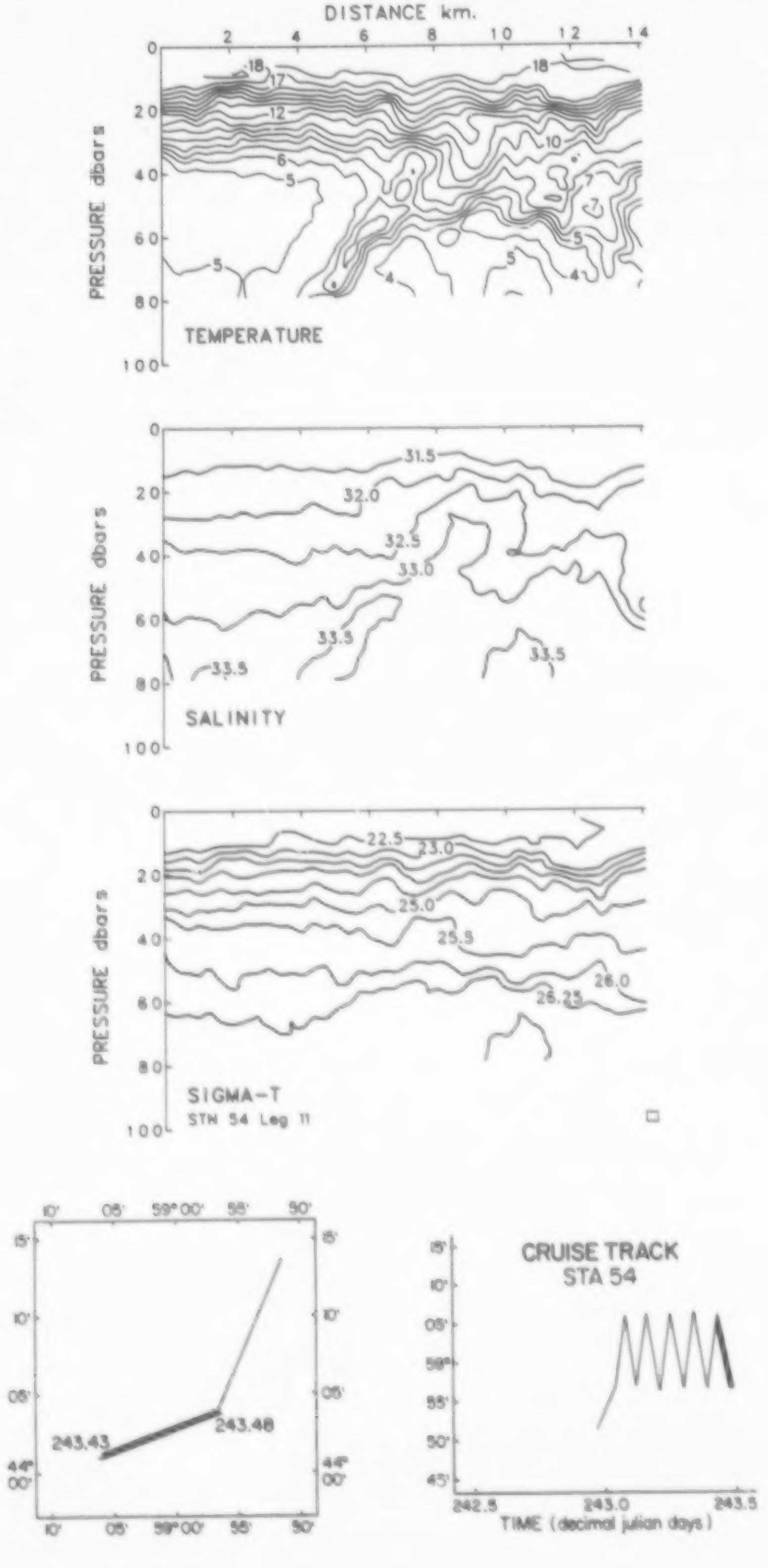

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 54 Leg 11
243.43
243.48
CRUISE TRACK
STA 54
TIME (decimal julian days)

Fig. 258

Figure 259.

BATFISH station 55: 1 section of Temperature, Salinity and Sigma-t vs. pressure, location map and latitude vs. time plot.

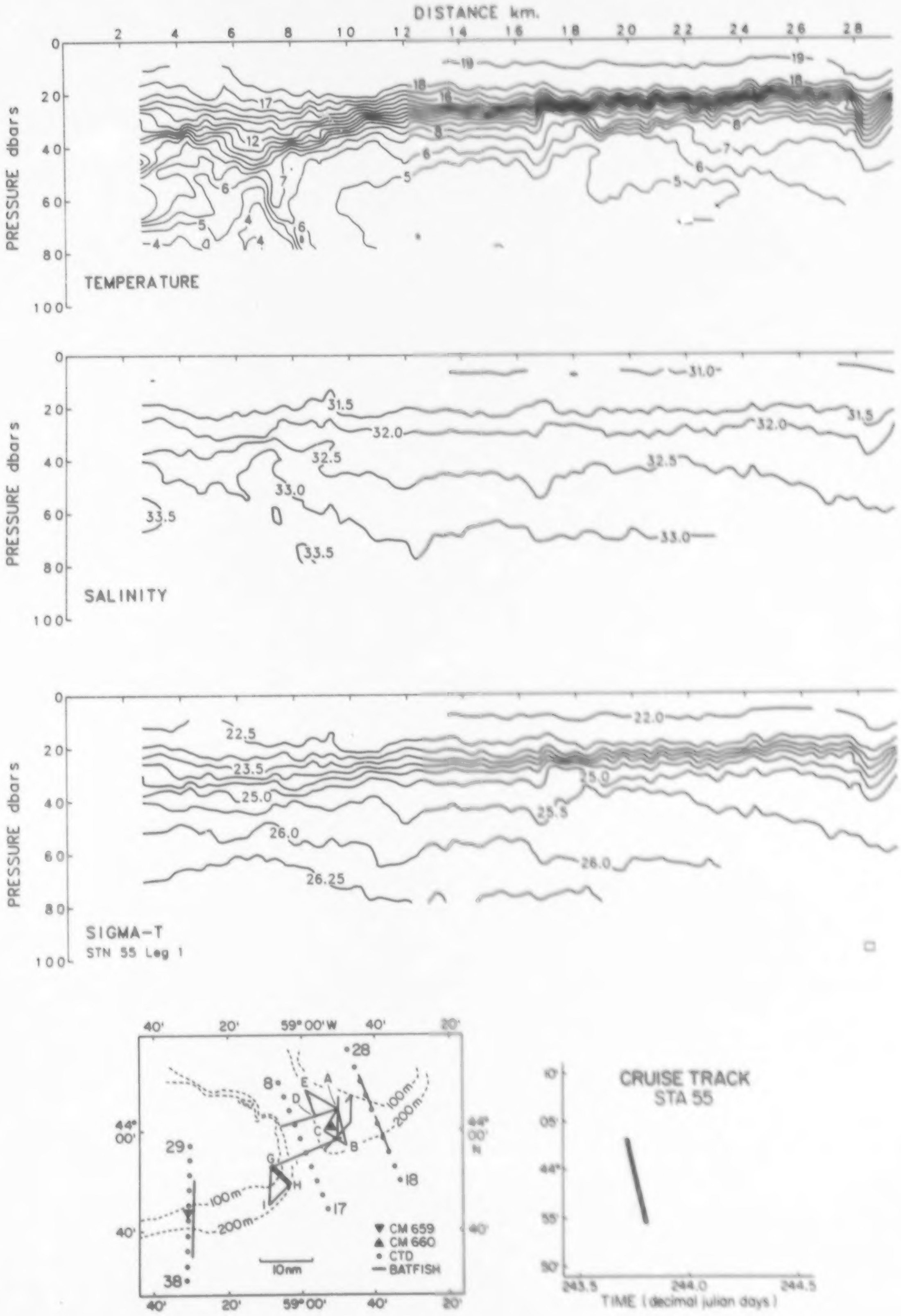
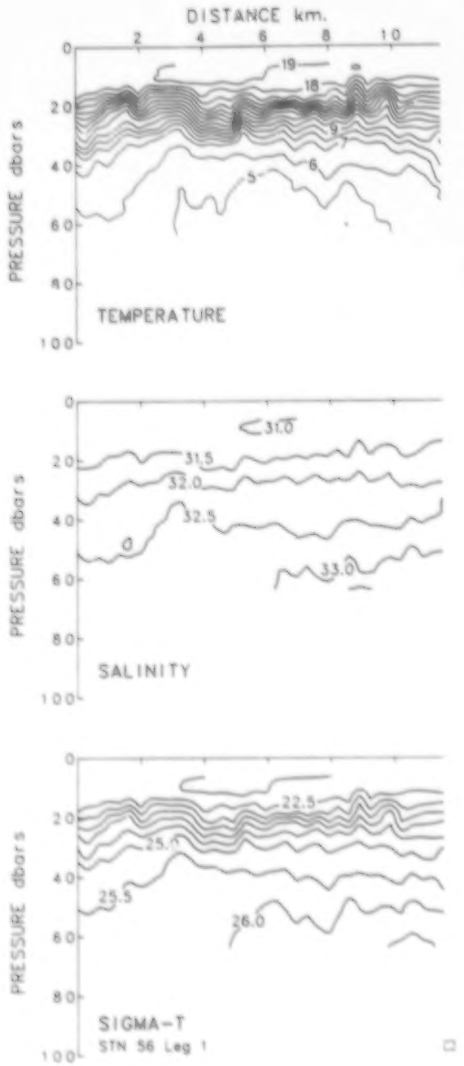
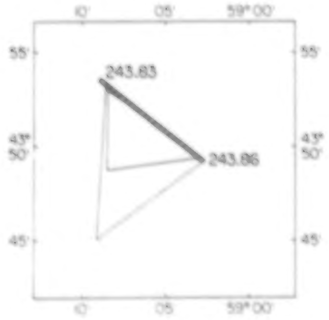

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 55 Leg 1
CM 659
CM 660
CTD
BATFISH
10nm
100m
200m
CRUISE TRACK
STA 55
TIME (decimal julian days)

Fig. 259

Figures 260-266.

BATFISH station 56: 7 sections of Temperature, Salinity and Sigma-t vs. pressure, location map and latitude vs. time plot.


DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 56 Leg 1


243.83
243.86

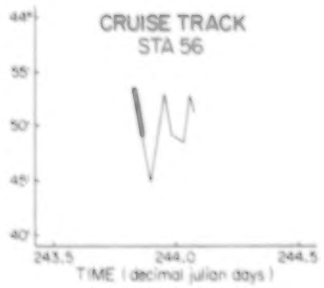

CRUISE TRACK
STA 56
TIME (decimal julian days)

Fig. 260

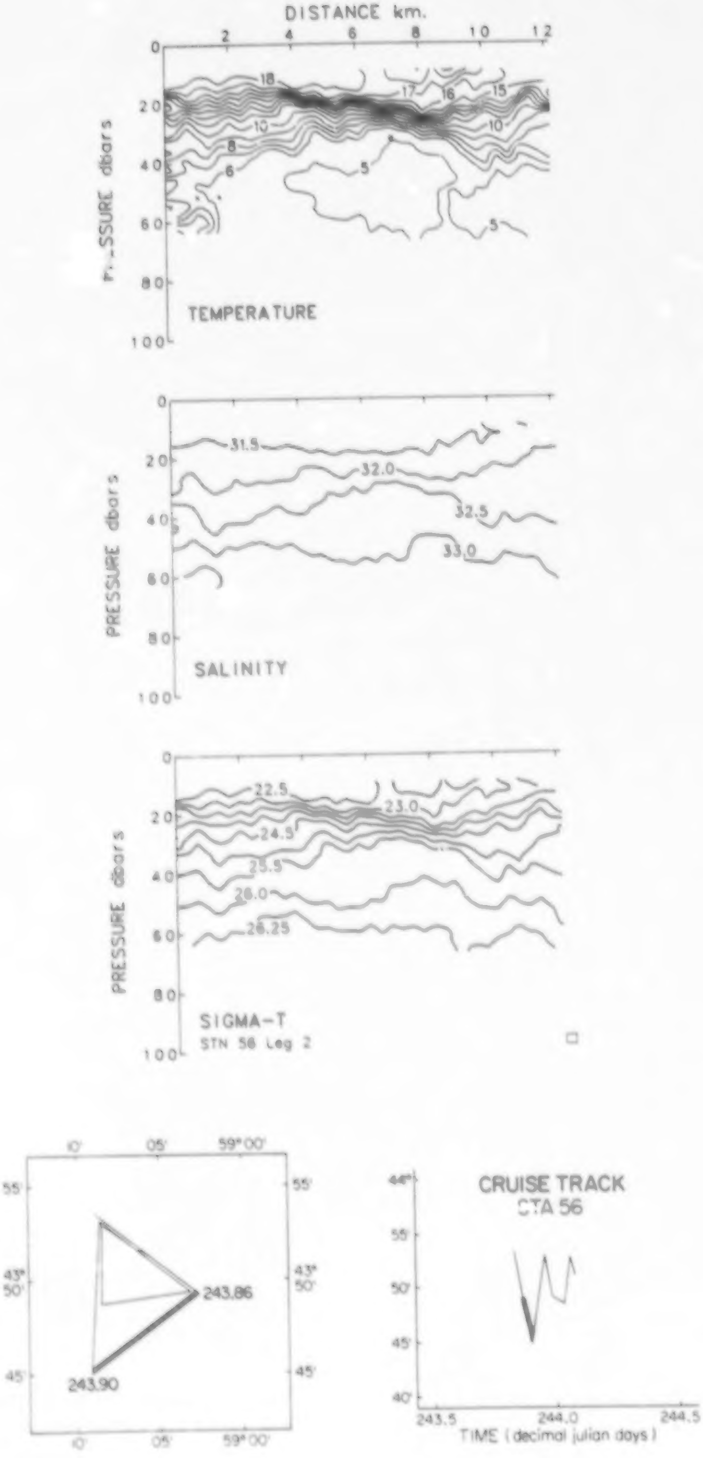

DISTANCE km.
TEMPERATURE
SALINITY
SIGMA-T
STN 56 Leg 2
PRESSURE dbars
CRUISE TRACK
TIME (decimal julian days)
243.86
243.90

Fig. 261

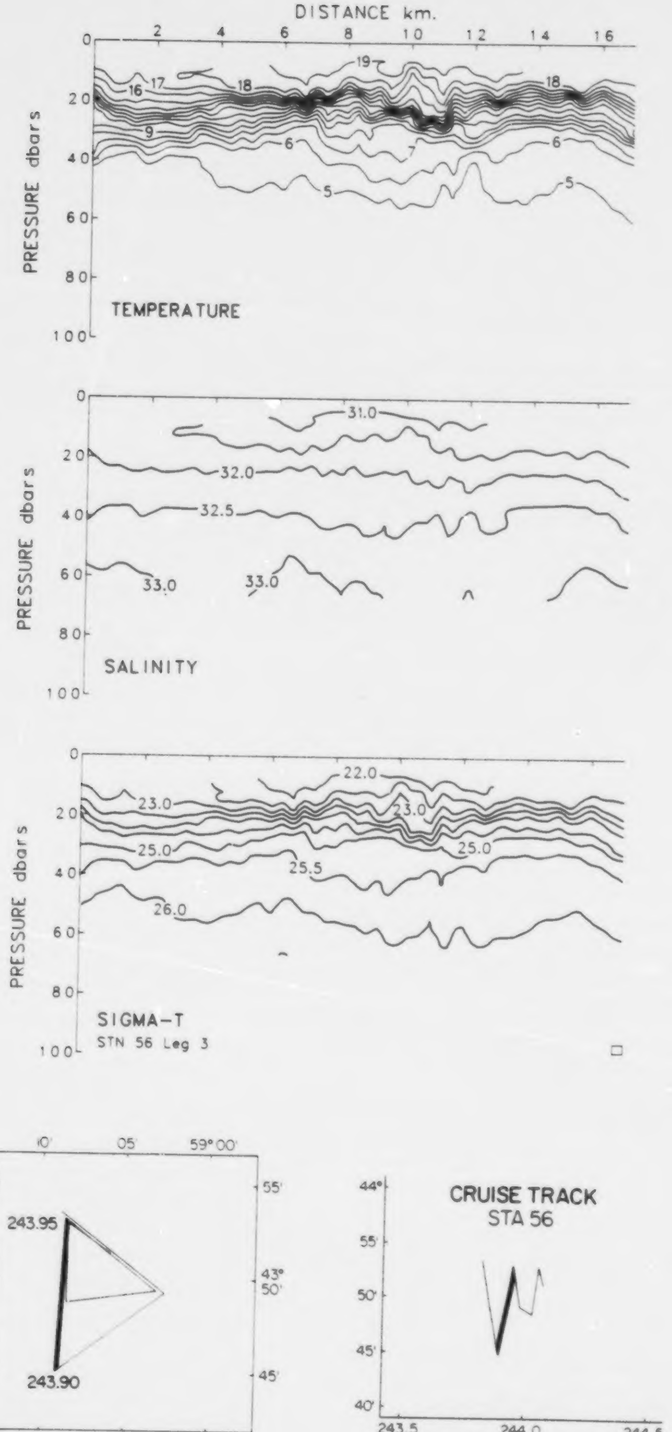

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
PRESSURE dbars
SIGMA-T
STN 56 Leg 3
243.95
243.90
CRUISE TRACK
STA 56
TIME (decimal julian days)

Fig. 262

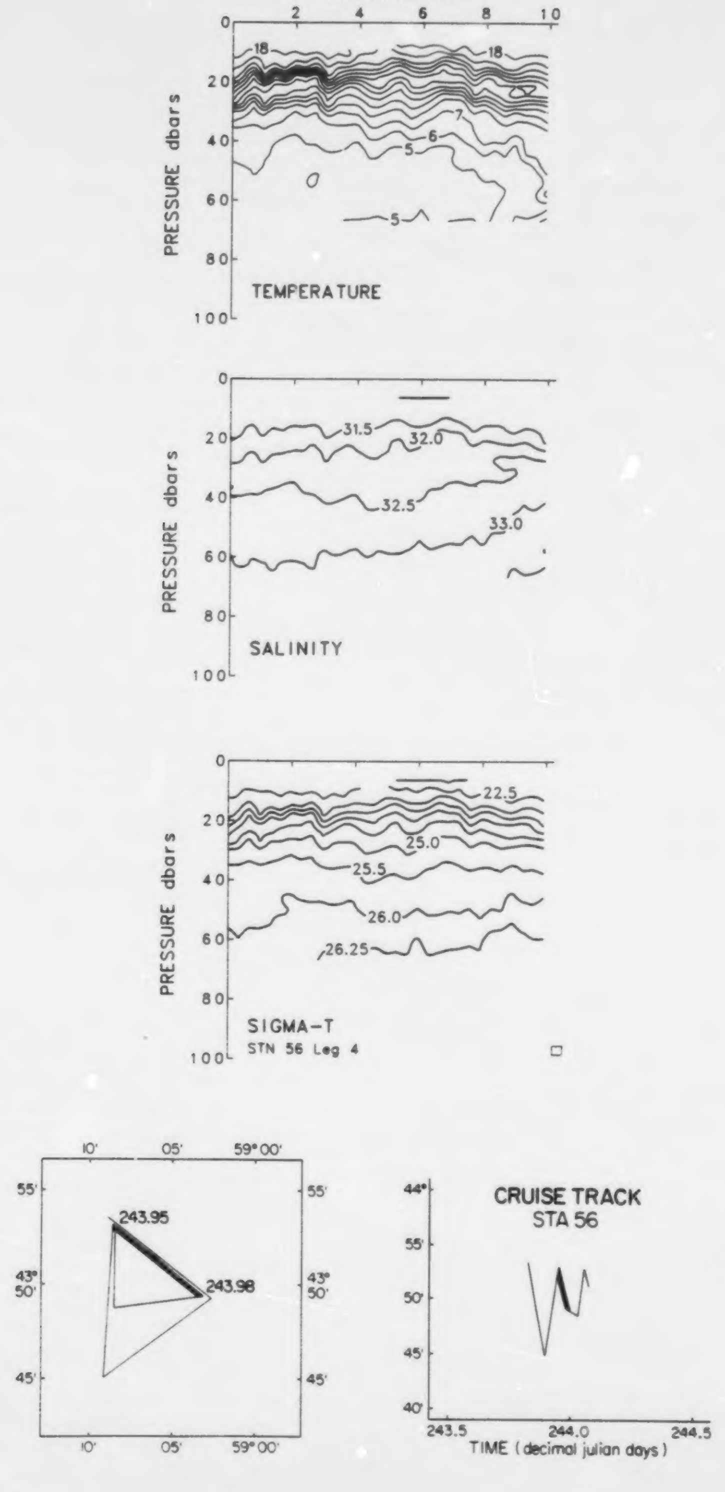

DISTANCE km.
0 2 4 6 8 10
PRESSURE dbars
0 20 40 60 80 100
18
7
6
5
TEMPERATURE
31.5
32.0
32.5
33.0
SALINITY
22.5
25.0
25.5
26.0
26.25
SIGMA-T
STN 56 Leg 4
10' 05' 59° 00'
55'
43° 50'
45'
243.95
243.98
CRUISE TRACK
STA 56
44°
40'
243.5 244.0 244.5
TIME (decimal julian days)

Fig. 263

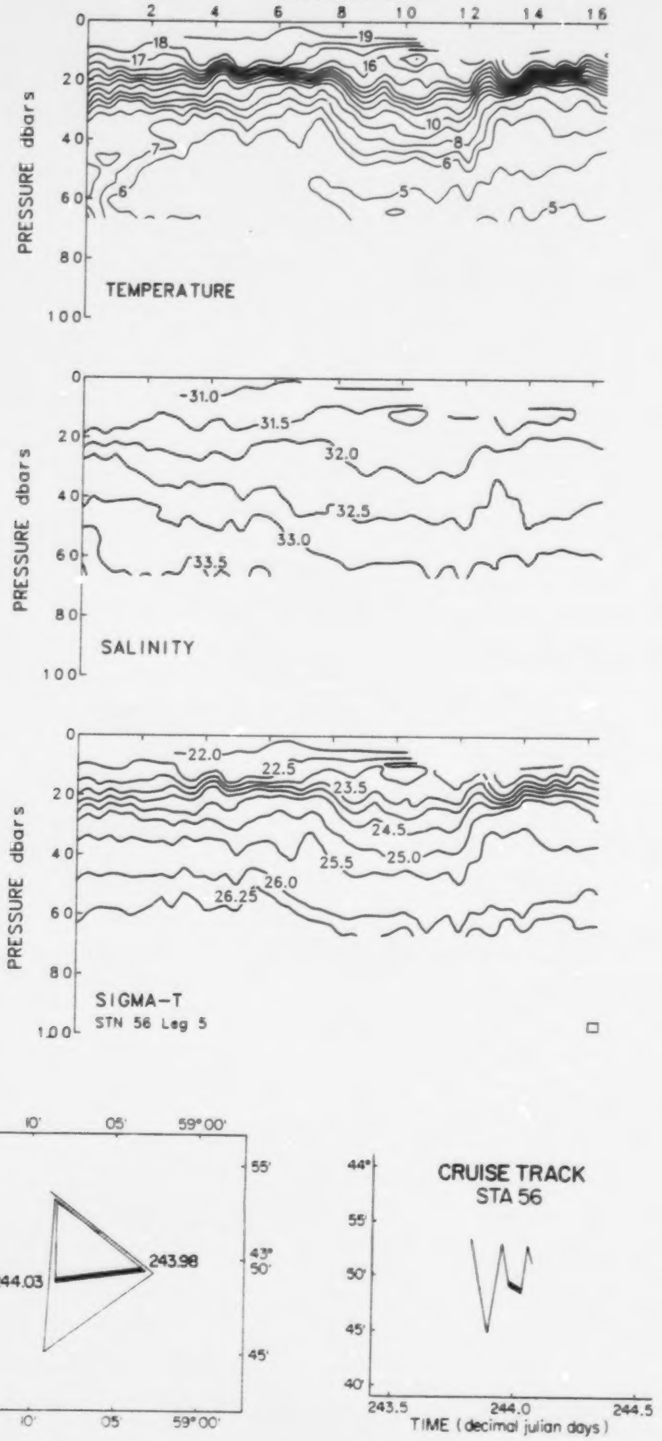

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
SIGMA-T
STN 56 Leg 5
CRUISE TRACK
STA 56
244.03
243.98
TIME (decimal julian days)

Fig. 264

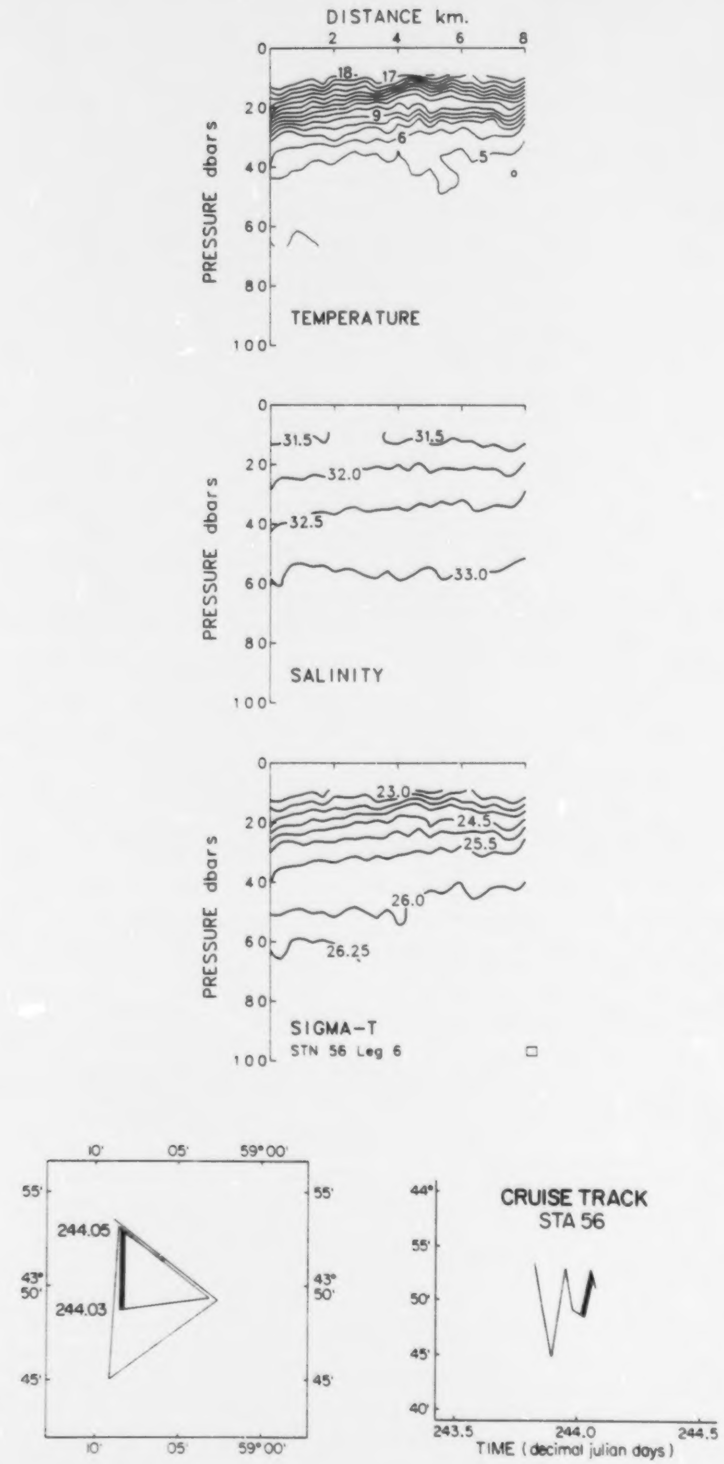
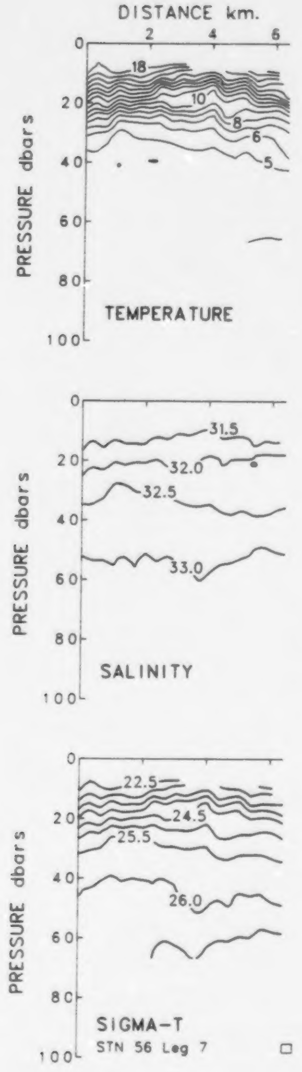

DISTANCE km.
2
4
6
8
0
20
40
60
80
100
PRESSURE dbars
18
17
9
6
5
TEMPERATURE
31.5
31.5
32.0
32.5
33.0
SALINITY
23.0
24.5
25.5
26.0
26.25
SIGMA-T
STN 56 Leg 6
10'
05'
59°00'
55'
43°
50'
45'
244.05
244.03
CRUISE TRACK
STA 56
44°
55'
50'
45'
40'
243.5
244.0
244.5
TIME (decimal julian days)

Fig. 265


DISTANCE km.
PRESSURE dbars
TEMPERATURE
18
10
8
6
5
SALINITY
31.5
32.0
32.5
33.0
SIGMA-T
22.5
24.5
25.5
26.0
STN 56 Leg 7

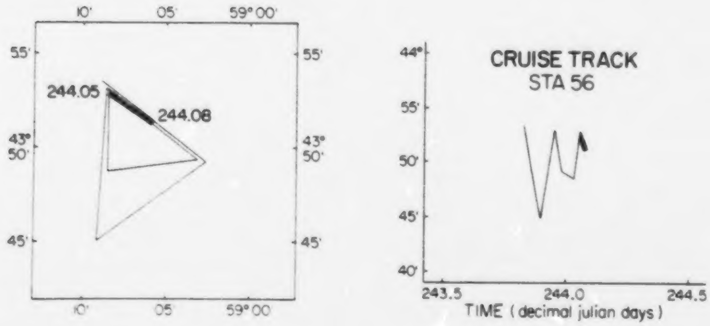

244.05
244.08
59° 00'
43° 50'
CRUISE TRACK
STA 56
TIME (decimal julian days)

Fig. 266

Figures 267-279.

BATFISH station 57: 8 sections of Temperature, Salinity and Sigma-t vs. pressure, location map and latitude vs. time plot. Acoustic backscatter plots for selected sections.

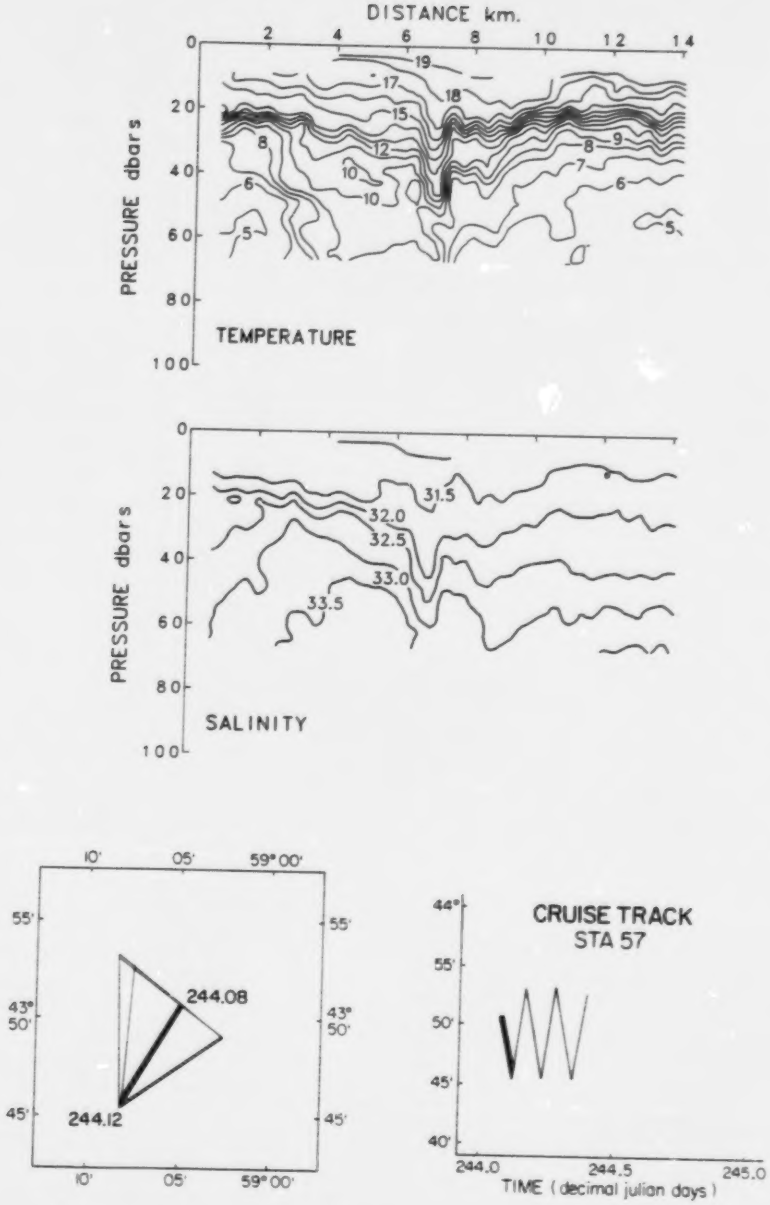
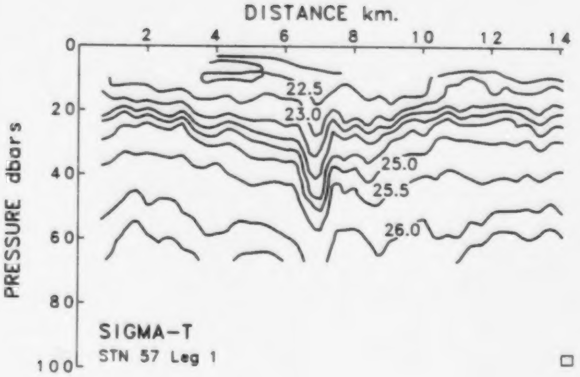

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
CRUISE TRACK
STA 57
244.08
244.12
TIME (decimal julian days)

Fig. 267


DISTANCE km.
2
4
6
8
10
12
14
0
20
40
60
80
100
PRESSURE dbars
22.5
23.0
25.0
25.5
26.0
SIGMA-T
STN 57 Leg 1

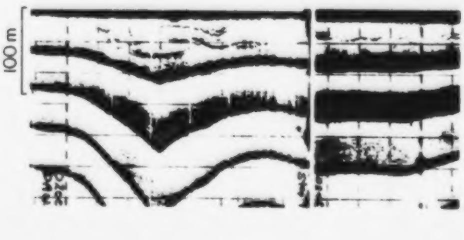

100m

Fig. 268

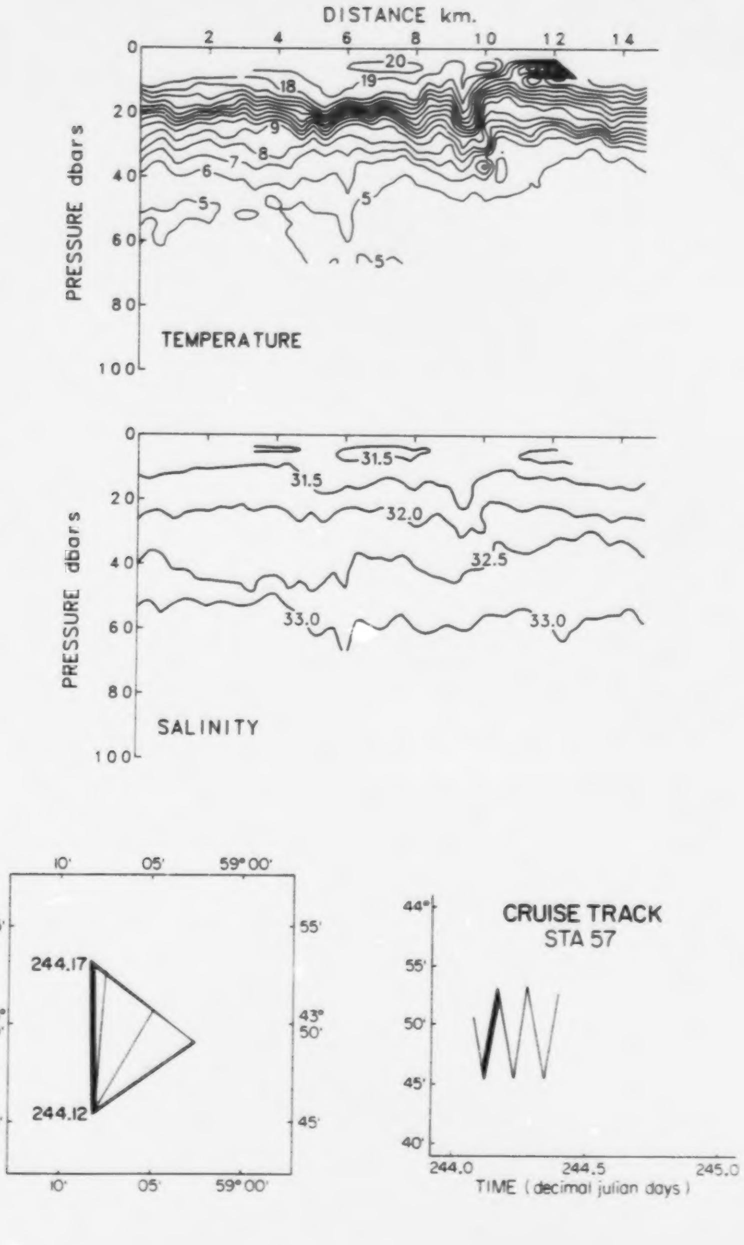

DISTANCE km.
2
4
6
8
10
12
14
0
20
40
60
80
100
PRESSURE dbars
20
19
18
9
8
7
6
5
5
5
TEMPERATURE
0
20
40
60
80
100
PRESSURE dbars
31.5
31.5
32.0
32.5
33.0
33.0
SALINITY
10'
05'
59° 00'
55'
43° 50'
45'
244.17
244.12
44°
55'
50'
45'
40'
CRUISE TRACK
STA 57
244.0
244.5
245.0
TIME (decimal julian days)

Fig. 269

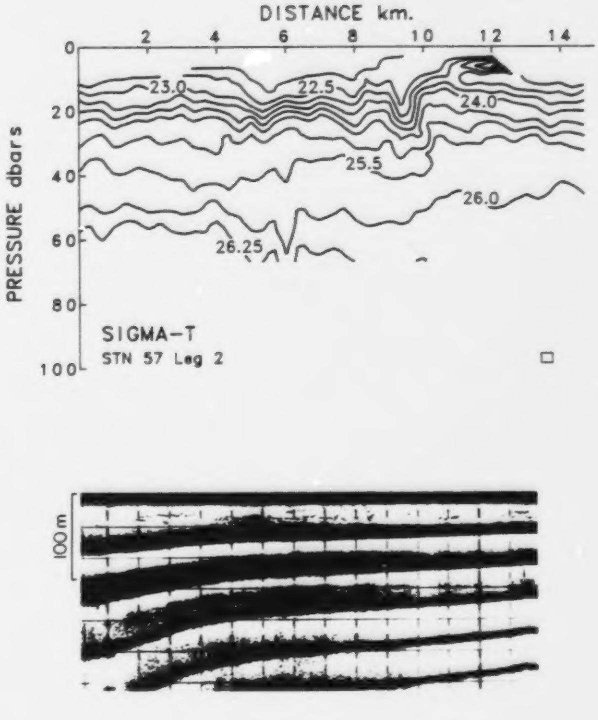

DISTANCE km.
2
4
6
8
10
12
14
0
20
40
60
80
100
PRESSURE dbars
23.0
22.5
24.0
25.5
26.0
26.25
SIGMA-T
STN 57 Leg 2
100m

Fig. 270

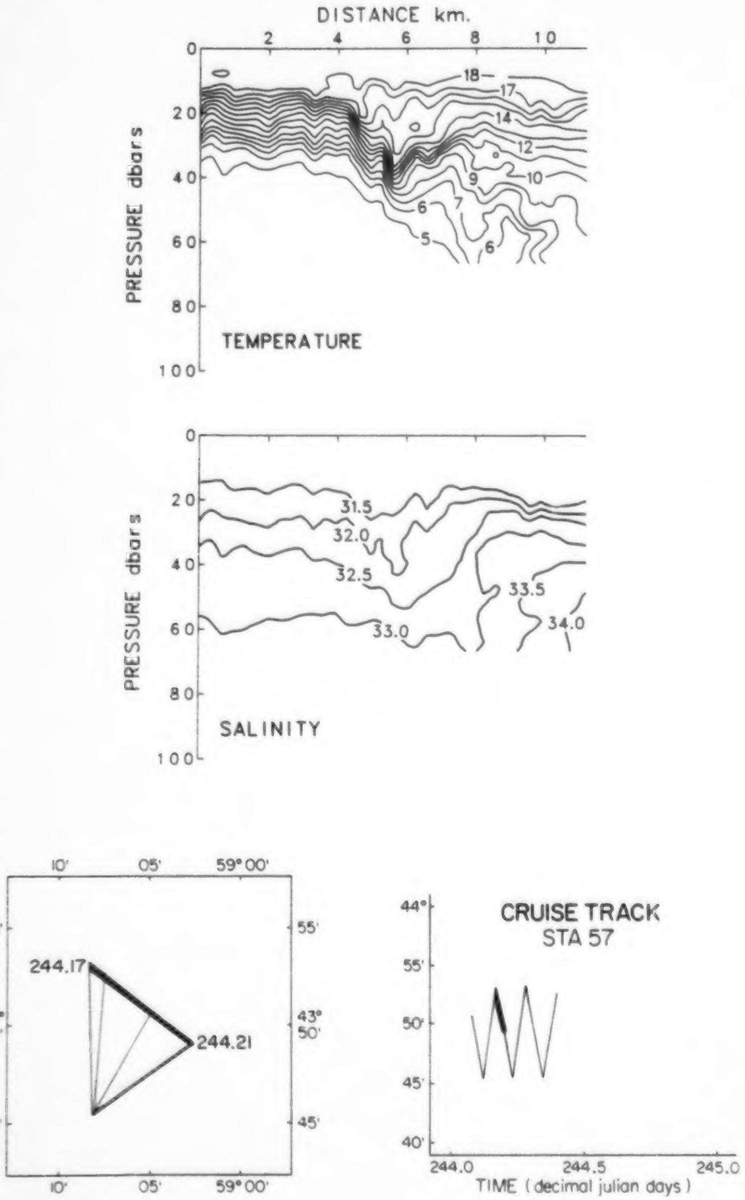

DISTANCE km.
PRESSURE dbars
TEMPERATURE
SALINITY
31.5
32.0
32.5
33.0
33.5
34.0
CRUISE TRACK
STA 57
244.17
244.21
TIME (decimal julian days)
244.0
244.5
245.0
59°00'
43°

Fig. 271

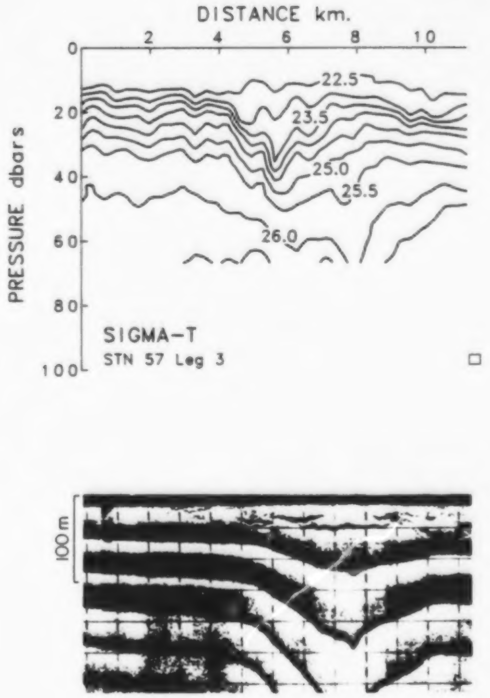

DISTANCE km.
2
4
6
8
10
0
20
40
60
80
100
PRESSURE dbars
22.5
23.5
25.0
25.5
26.0
SIGMA-T
STN 57 Leg 3
100m

Fig. 272

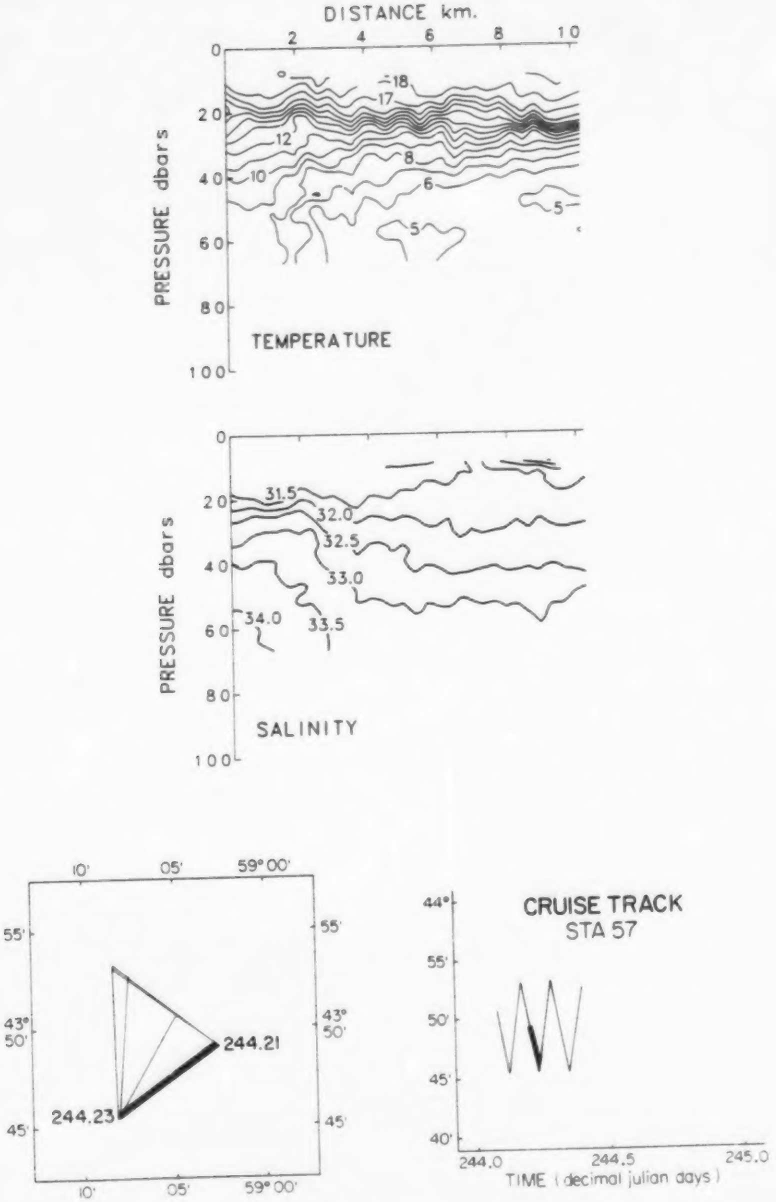
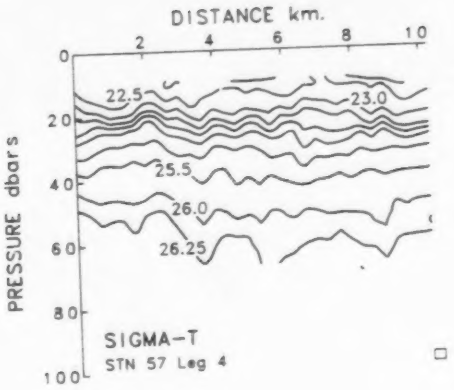

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
CRUISE TRACK
STA 57
244.21
244.23
TIME (decimal julian days)

Fig. 273


DISTANCE km.
2
4
6
8
10
0
20
40
60
80
100
PRESSURE dbars
22.5
23.0
25.5
26.0
26.25
SIGMA-T
STN 57 Leg 4

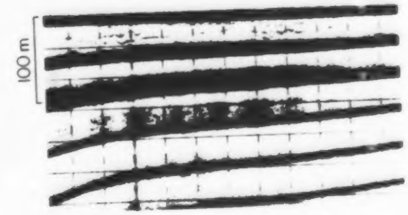

100m

Fig. 274

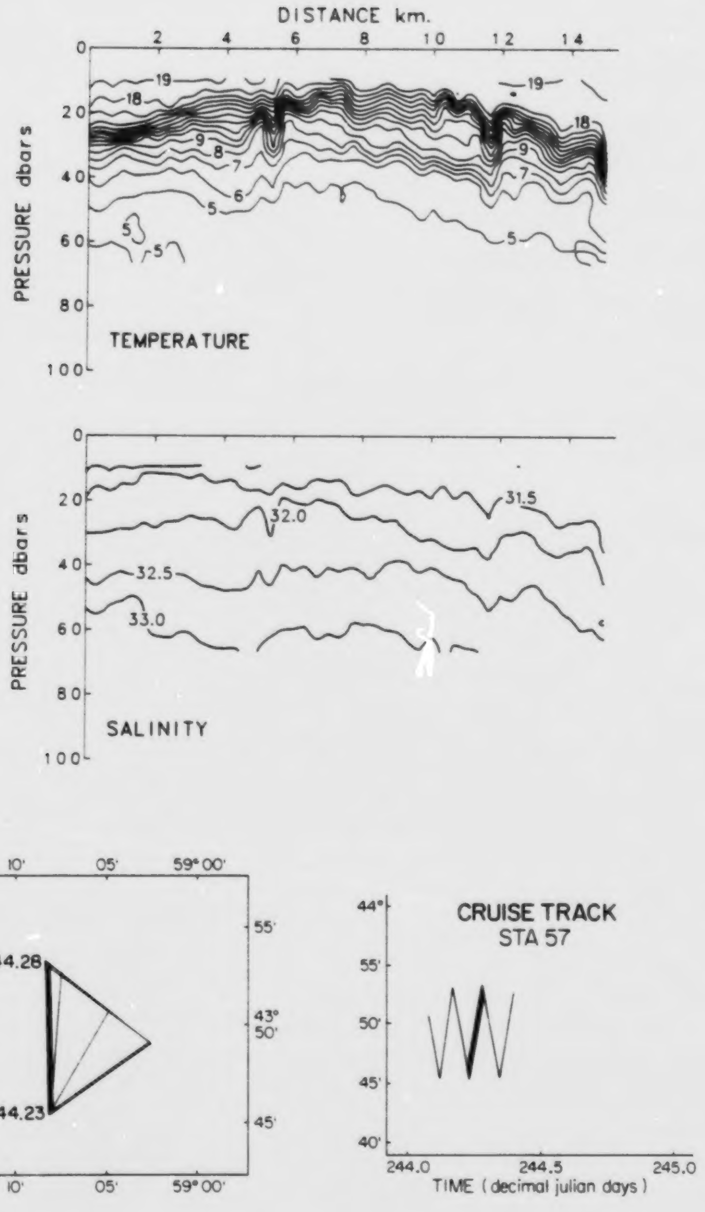

DISTANCE km.
PRESSURE dbars
TEMPERATURE
PRESSURE dbars
SALINITY
244.28
244.23
CRUISE TRACK
STA 57
TIME (decimal julian days)

Fig. 275

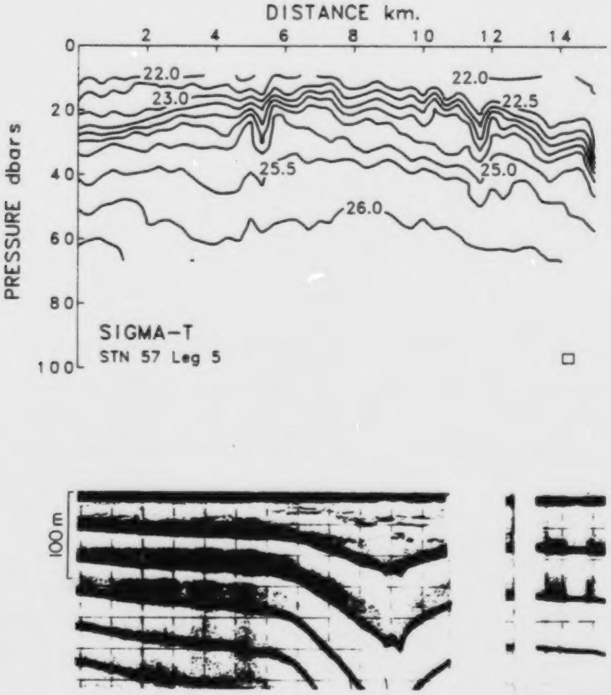

DISTANCE km.
2 4 6 8 10 12 14
0
20
40
60
80
100
PRESSURE dbars
22.0
23.0
22.0
22.5
25.5
25.0
26.0
SIGMA-T
STN 57 Leg 5
100m

Fig. 276

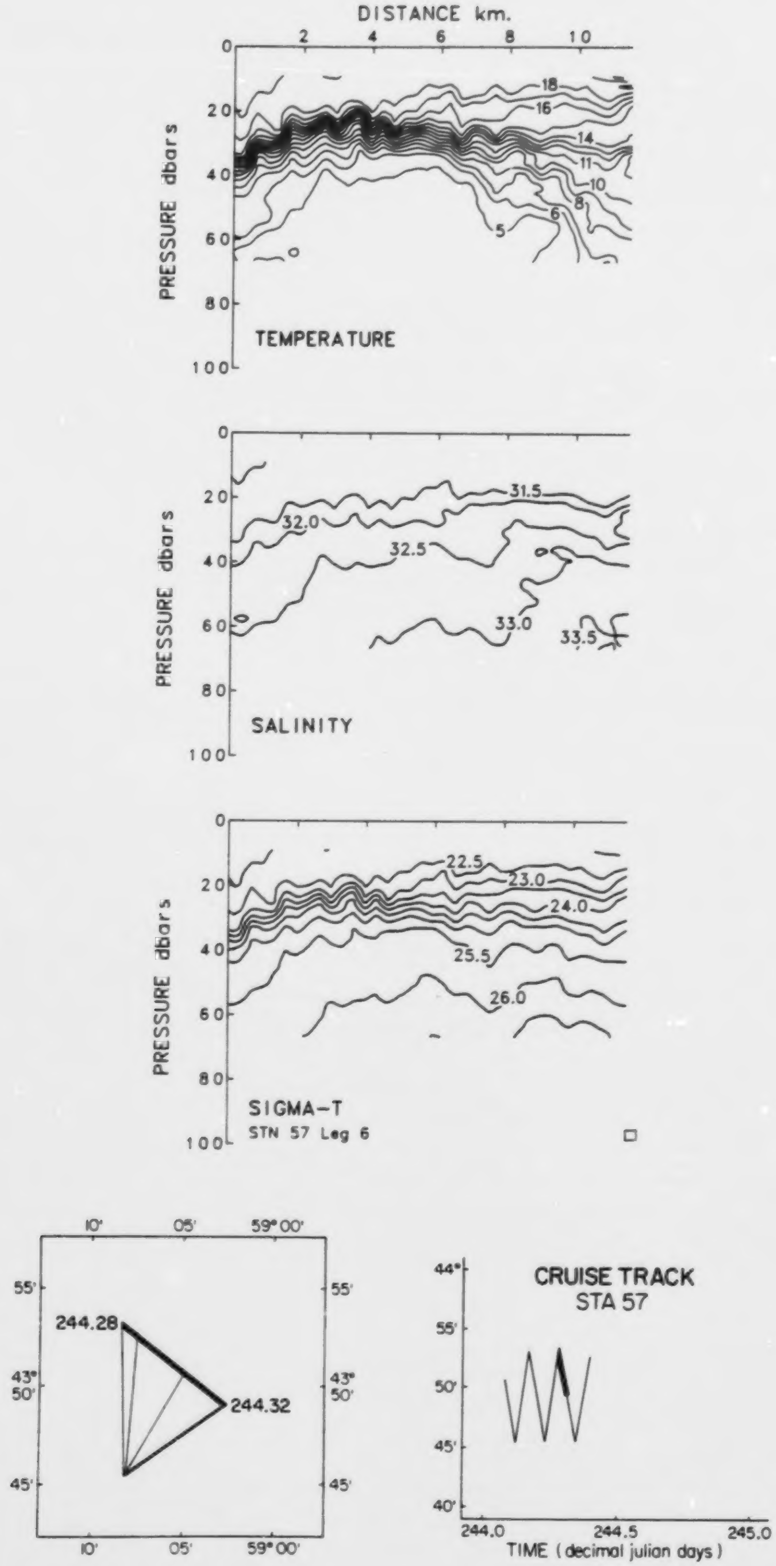

DISTANCE km.
2
4
6
8
10
0
20
40
60
80
100
PRESSURE dbars
18
16
14
11
10
8
6
5
TEMPERATURE
PRESSURE dbars
31.5
32.0
32.5
33.0
33.5
SALINITY
PRESSURE dbars
22.5
23.0
24.0
25.5
26.0
SIGMA-T
STN 57 Leg 6
10'
05'
59° 00'
55'
43° 50'
45'
244.28
244.32
CRUISE TRACK
STA 57
44°
40'
244.0
244.5
245.0
TIME (decimal julian days)

Fig. 277

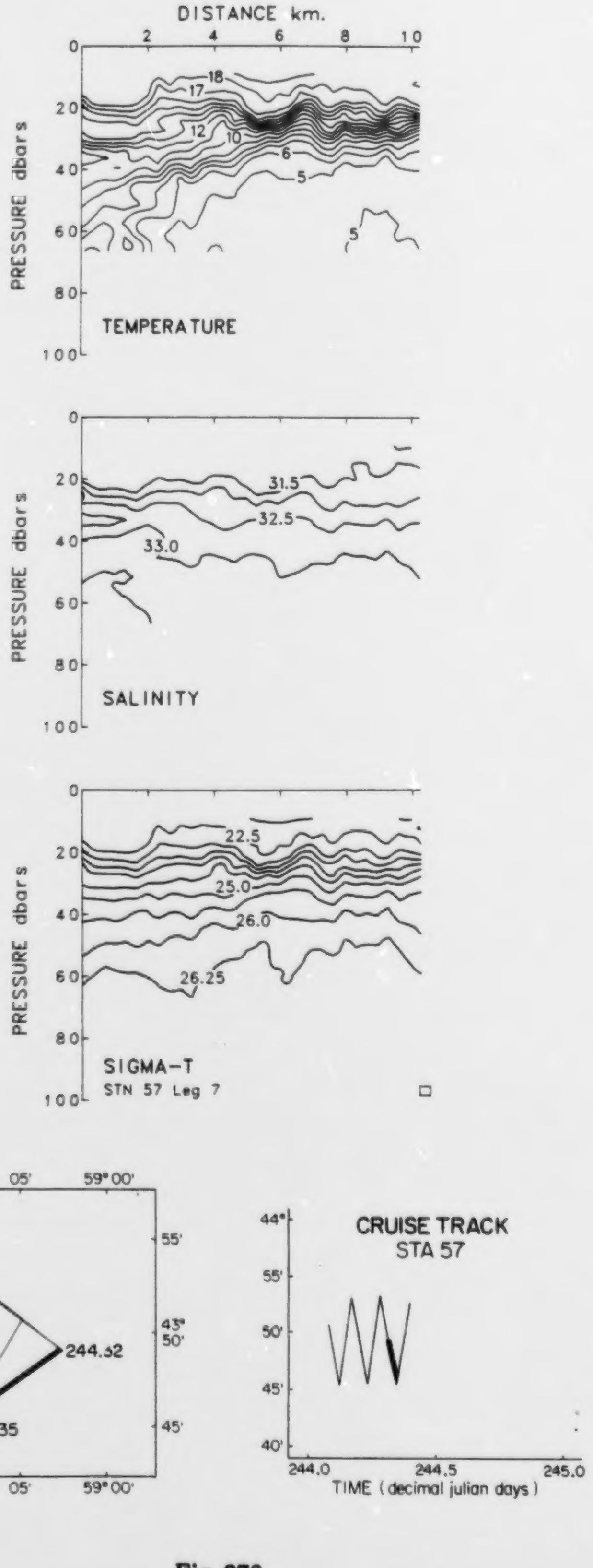

DISTANCE km.
2
4
6
8
10
0
20
40
60
80
100
PRESSURE dbars
18
17
12
10
6
5
5
TEMPERATURE
31.5
32.5
33.0
SALINITY
22.5
25.0
26.0
26.25
SIGMA-T
STN 57 Leg 7
10'
05'
59° 00'
55'
43° 50'
45'
244.32
244.35
CRUISE TRACK
STA 57
44°
40'
244.0
244.5
245.0
TIME (decimal julian days)

Fig. 278

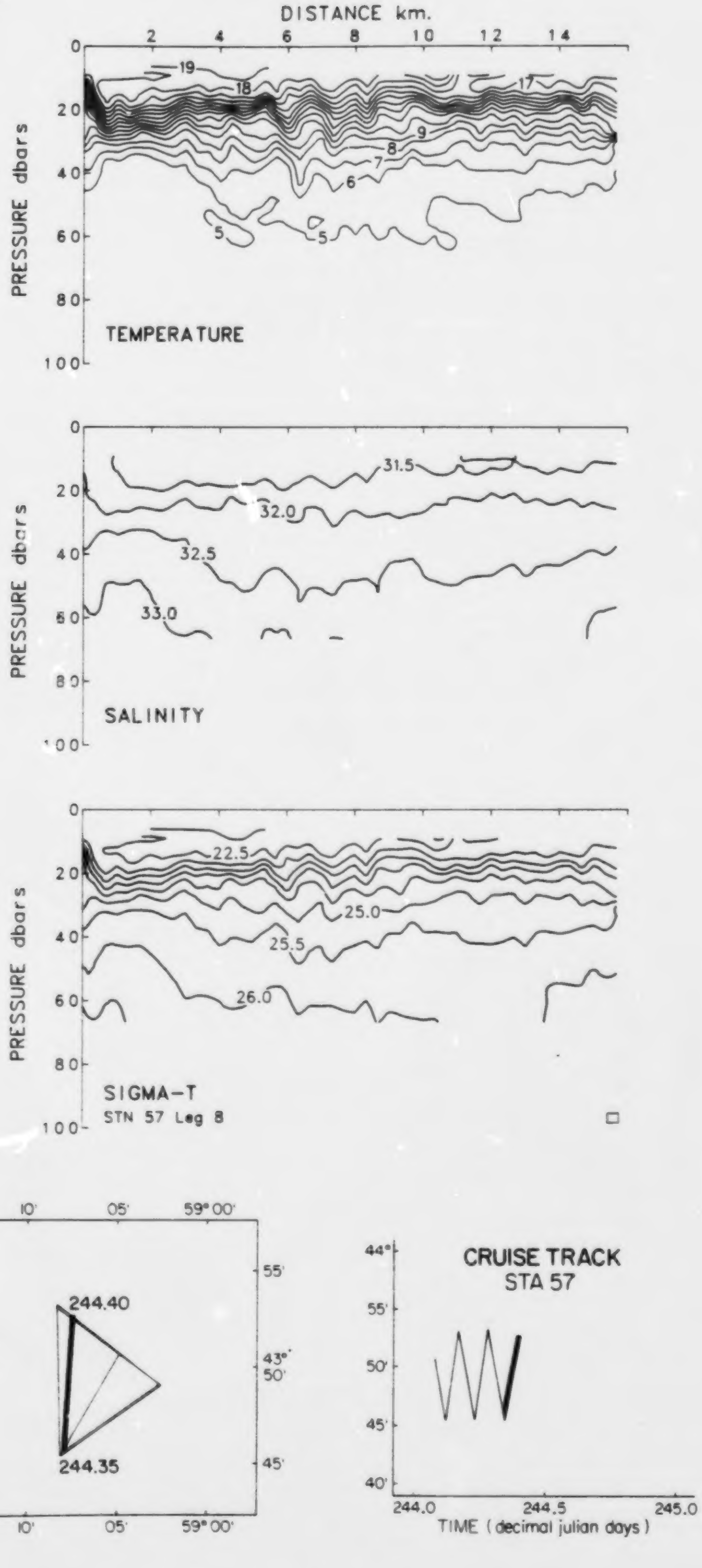

DISTANCE km.
2 4 6 8 10 12 14
0 20 40 60 80 100
PRESSURE dbars
19
18
17
9
8
7
6
5
5
TEMPERATURE
PRESSURE dbars
31.5
32.0
32.5
33.0
SALINITY
PRESSURE dbars
22.5
25.0
25.5
26.0
SIGMA-T
STN 57 Leg 8
10' 05' 59° 00'
55'
43° 50'
45'
244.40
244.35
CRUISE TRACK
STA 57
44°
55'
50'
45'
40'
244.0 244.5 245.0
TIME (decimal julian days)

Fig. 279